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THE MUNICIPAL INDEX AND ATLAS, used in connection with the current advertisements in THE AMERICAN CITY, places local officials in the most favorable position to obtain all types of available equipment and supplies from manufacturers who desire to serve municipal government departments. THE MUNICIPAL INDEX AND ATLAS (750 pages) is published annually by the AMERICAN CITY MAGAZINE CORPORATION, 470 Fourth Avenue, New York 16, N. Y.

See pp. 19, 21, 22, 24, 26, 127, 129 for catalogs and publications on municipal and civic subjects

List of coming conventions on page 125. For Index to Advertisements see page 166.

Countin' up for 1946

It would take a lot of fingers (and toes) to count up how much the Bell System accomplished in 1946—the busiest year in our whole history.

3,300,000 telephones added

25,000,000 more calls a day handled

$700,000,000 new equipment made and installed to expand and improve your service

160,000 net increase in employees—total now 640,000

$400,000,000 increase in payroll

120,000 war veterans reinstated and employed since V-J Day

The story of the year was one of determined progress, despite shortages and many post-war problems. And most calls went through fast.

For 1947, the Bell System aims to go forward to still better service for more and more people.

BELL TELEPHONE SYSTEM

Our Municipal Notebook

A Year for Planning and Statesmanship

DURING the last six years, we Americans as a nation have resembled somewhat the man who had fallen overboard from a storm-tossed boat. When rescued and asked whether he had tried to swim, he replied that he hadn't thought of it; he had been too busy keeping himself from drowning.

Now that our collective feet have reached bottom and our heads are emerging from the waves, the time has come for some serious thought as to how our ship of state—and ship of city—can be made to ride with greater steadiness and safety.

The task before us is one of great danger and great urgency. As Raymond B. Fosdick, president of the Rockefeller Foundation, pointed out in *The New York Times Magazine* of November 24, 1946:

"We are living in a world that threatens to brush aside everything that intelligence stands for. . . . Over all our work and plans hangs the ominous question: *Have we time?*"

"The danger," says Mr. Fosdick, "is that we are discovering the right things in the wrong order, which is another way of saying that we are learning how to control nature before we have learned how to control ourselves."

Statesmanship of a high order is called for—statesmanship compounded of wisdom in planning and vigor in action; statesmanship at the local level as well as at the national and international level.

How Date the Annual Report?

TO *look* timely as well as to *be* timely is a big help to wide readership of annual reports. In too many cities voters did not receive until near the end of 1946—or will not receive until 1947—their municipal government's report dated 1945.

When reports for the 1946 calendar year are issued—which should, of course, be as early in 1947 as possible—why not give prominence on the front cover to 1947 as the date of publication, indicating in smaller type on the inside title page the actual period covered by the report?

The events of Mondays are recorded in morning newspapers dated Tuesday. A similar practice as to yearly dates on municipal documents would add this desirable appearance of timeliness to annual reporting. Cities whose fiscal year is other than the calendar year do not have this problem, of course, but, like the afternoon newspapers, should publish as early as possible after the recorded events occur.

For other hints on annual reports, see pages 70, 71, and 72 of last month's issue of THE AMERICAN CITY.

Notice the typography and makeup changes in this first issue of the new year? They're part of an effort by the editors to make the editorial content of *The American City* even more readable and attractive than heretofore. Comments and suggestions about the appearance and content of the magazine will be appreciated.

Letters are always welcome from municipal officials having opinions for which they want an audience, or offering ideas for the betterment of local government services. What have you to suggest at this time?

U. S. Conference of Mayors Asks Passage of Wagner-Ellender-Taft Bill

THE lead article of the December 15 issue of the *United States Municipal News*, news organ of the United States Conference of Mayors, declares that the housing problem is creating intolerable slum conditions in cities all over the country and that zoo animals have better housing than some city human residents. In the article, entitled "Housing — A Challenge to America," the following comment is made:

"A Magna Charta of Housing—the Wagner-Ellender-Taft bill—was passed by the Senate this year but no action was taken in the House. If decent housing is to become a reality for hundreds of thousands of American families, it would seem that this proposed program should be one of the number one jobs of the new Congress when it convenes in January. As Senator Taft of Ohio has said: 'There can be no greater responsibility than to assist local governments to provide for all the children who are born in the United States decent home surroundings.'"

Haughty Airport vs. Humble Sewer

THE right to condemn for airport purposes, argues W. Reginald Jones, attorney for the Port of Oakland, Calif., is superior to the right to condemn for sewer purposes. Mr. Jones presented this as one of the arguments in the Port's legal battle with San Leandro over condemnation proceedings for tide lots south of the Oakland Municipal Airport.

As far as this specific case is concerned, the Port's claim may be justified, particularly if, as Mr. Jones goes further and says, an alternate sewer plan is available. But to generalize that an airport has superior rights over a sewer is to tread on questionable ground indeed. To be sure, the airport may be great and colorful, with sleek, powerful planes gliding in from distant lands carrying mysterious passengers and exotic cargos, while the sewer humbly burrows underground performing its task without fuss or fanfare. But, actually to measure superior qualities, one might try doing without either for a short time. If Oakland were without its airport for a week, it would be inconvenienced; but, if its sewers were inoperative for a week, it would have a disaster on its hands.

All of which points to the fact that in municipal affairs it is rather dangerous business to generalize. There are many occasions when the rights of the airport should be superior to that of other services; and, similarly, there are many occasions when they should be subordinate. Each case has its own merits.

War Memorials in Schools Could Aid World Peace

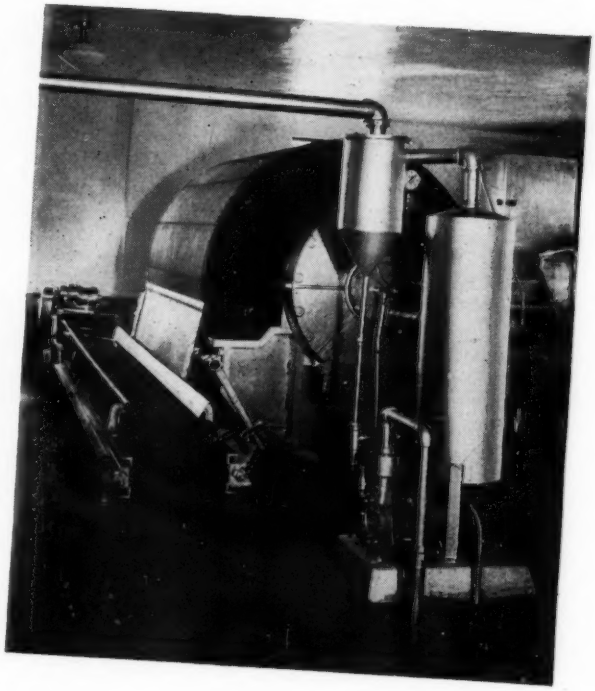
A TYPE of war memorial, which THE AMERICAN CITY hopes will be adopted in many communities, has been suggested to some groups now struggling with the problem of how best to give vitality to the idea that the dead can be honored best by memorials that are dedicated to the service of the living.

The proposal is for a type of memorial that would be seen—and repeatedly seen—by every school child, high school youth, and college student in the city. It would take the form in every school of a bronze tablet or plaque of high artistic design and car-

Who'd Guess?

Yes! Who'd guess that this comfortable looking dwelling houses the city's sewage treatment plant? — Yet a number of Municipalities have installed sewage treatment equipment and accessories in equally attractive buildings. Compact EIMCO Sewage Filters and accessories make this type of housing possible—plants are located close in and their operations are free from odors. The use of Eimco vacuum filters avoids the installation of sludge drying beds that occupy thousands of square feet of space out in the open and necessitates locating sewage treatment plants considerable distances from the city. In addition, Eimco's sewage treatment equipment offers lower initial, operating and maintenance costs and assures a type of building and construction that does not spoil the natural beauty of the surrounding community.

Write for more information on Eimco's Sewage Treatment Equipment.



Typical installation of EIMCO Continuous Vacuum Filter in Sewage Treatment Plant. Room here is 24' x 24' with 9' ceiling. The large room provides plenty of space for auxiliary operating equipment.

EIMCO

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Executive Offices and Factories: Salt Lake City 8, Utah
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A-108

ry a brief and inspiring message.

To this enduring but somewhat static type of memorial there might be a dynamic adjunct in the form of an annual contest in the high schools in which medals or other suitable recognition would be awarded for the best essays or posters, or both, on some theme, to be selected from year to year, relating to international understanding and world peace.

Sources of Funds

Funds could be raised simultaneously for these two purposes; they might come partly from public and partly from private contributions. For the medals or other awards, a capital fund ought to be provided, the interest on which would be ample to cover the annual outlay involved.

THE AMERICAN CITY would be glad to suggest, to anyone interested, some possible variations or elaborations of this two-fold memorial project.

For municipal officials and citizens' groups who are considering other methods of "Commemoration Through Community Services," such as community centers, the brochure on that subject, published by this magazine about a year ago, has many alternative suggestions. Another reference that might be consulted is the Russell Sage Foundation new pamphlet, "Community Centers as Living War Memorials," by James Dahir.

Hints to Complaining Citizens

A PARTICULARLY striking pamphlet designed to stimulate greater citizen participation in the programs of local organizations trying to improve their community has been released by the Community Development Committee of the New England Council. Effectively and cleverly illustrated, its theme is that "they" is "you"—that people who remain on the sidelines vaguely complaining that nothing is being done to better existing conditions should realize their local community responsibilities in pressing for improvements.

The pamphlet recommends these steps for persons interested in community development:

1. *Identify the problems to be licked.* An informal group of friends with similar ideas should:

(a) Write down what needs doing. Get definite ideas in black and white.

(b) Prove the list is right. Talk it over with responsible citizens.

(c) Find and enlist other groups who could help. (One good organization accomplishes more than several small ones.)

2. *Apply good common sense and hard work:*

(a) Aim for one thing at a time. (First things first, but choose well.)

(b) Then get the facts. (Also the best advice available.)

(c) Stimulate a strong and informed public opinion. (And strike hard.)

"Then," the pamphlet states, "you will know THEY are on the road to progress for a better home town."

The New England Council's Community Development Committee, which issued the pamphlet, has available material on the "know how" of getting specific programs—such as housing, community planning, traffic, and parking—under way and actually accomplished. For such information, the council may be addressed at the Statler Building, Boston 16, Mass.

THEY ought to do something about that mess over there. Look, no parking space! That run-down store front! Why don't THEY . . .
NOW
JUST -
Who is They?

Cover of the N.E.C. Pamphlet

Business Machines Are Only Sixty Years Old

BOTH THE AMERICAN CITY and THE MUNICIPAL INDEX carry the advertising of a number of manufacturers of accounting, tabulating, calculating, adding, and duplicating machines. Municipal officials have become acquainted and familiar with such names as Addressograph-Multigraph, Burroughs, Dick, Friden, I.B.M., Marchant, National, Remington Rand, Underwood, makers of machines that speed accounting and office operations.

Ten years ago the two publications counted the number of business machines of all types owned by 384 municipalities. Of course, progressive Milwaukee was included. At that time the city owned 150 business machines compared with 287 in 1946. E. R. Matzek, chief accountant, Tabulating Division, now sends us a current breakdown permitting comparison between machines owned in 1936 and 1946, as follows: Adding machines, 75 in 1936 and 133 now; accounting machines, 26 and 36; addressing, 8 and 14; calculators, 17 and 37; check machines, 3 and 9; Mimeograph, 9 and 15; Dictaphones, 1 and 13; Ediphones, 0 and 2; tabulating machines, 0 and 19; other machines, 11 and 9.

In the last ten years hundreds of cities have mechanized their accounting and office practices. Hundreds more would have done so had not the war whisked business machines out of civilian reach. In each of those lean war years more than a hundred municipal officials informed THE MUNICIPAL INDEX they intended to mechanize their office routines when conditions permitted.

A Bit of History

Occasionally it is good to look back to the acorn. We know, for instance, that sixty-seven years ago Thomas Alva Edison invented the electric light that exploded into a new age. So where did business machines come from? Were they always available but only slightly discovered by municipalities until thrust forward municipally by THE AMERICAN CITY and THE MUNICIPAL INDEX in 1936?

In the December issue, A. Knaff of the Burroughs Adding Machine Company shows that this clearing, speeding, and smoothing of office work by machines began about sixty years ago. That is a very short time ago, and machine improvements had to be frequent, drastic, and continual to catch up with, and largely wipe out, the traditional and, until 1886, the inescapable inaccuracies and drudgeries of hand bookkeeping. The real gains have come in the last twenty years through the development of what Mr. Knaff accurately describes as "marvels of machine efficiency."

The machines have added for sixty years. Then they learned to subtract and soon to multiply and divide. They keep accounts, write bills, post payments. They make twenty, or one hundred, or ten thousand copies of documents. They assort, assemble, and collate statistics that show divergencies and directions of improvement. They do not eliminate paper and office work, but they get it done faster, more legibly and far more satisfactorily than in the good old days when the machine was often a drudge with a pen behind his ear hoping that Old Scrooge also would get the Dickens.

once again...

The 1,000,000-gal. Horton radial-cone elevated tank at Opelika, Alabama. It is 91 ft. 6 in. to bottom.

elevated storage

. . . proves its worth as the determining factor in *smoothing out* pressure fluctuations in a water distribution system

Water pressure in the Opelika, Alabama, distribution system varied from 60 lbs. to 30 lbs. per sq. in. before the 1,000,000-gal. Horton elevated tank shown at the left was erected. Since the tank was installed, the pressure is maintained at approximately 60 lbs. per sq. in.

The water supply for Opelika is pumped from an impounded lake three miles from the distribution system by two 1½ mgd turbine pumps. There are 25 miles of 2-in. to 16-in. distribution mains and 3 miles of 18-in. transmission mains in the system. Average daily consumption is 900,000 gals. In addition to the 1,000,000 gals. in elevated storage, there are 180,000 gals. of storage capacity in standpipes and 500,000 gals. in reservoirs.

Many engineers and civic leaders have recommended large capacity elevated water storage tanks to improve the water service in their communities. Write our nearest office for quotations on Horton elevated water tanks when planning *better* water service for *your* city.

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Los Angeles 14.....1403 Wm. Fox Bldg.
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Detroit 26.....1501 Lafayette Bldg.

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Water Supply and Treatment

A Brackish Supply Made Palatable

SO OFFENSIVE was the water supply for David, Ky., that drinking water had to be hauled in at great expense by truck.

For several years it had appeared that a palatable water supply obtained locally was out of the question for this small coal-mining community. Residents there had resigned themselves to the expense of hauling water by truck over a ten-mile route through the mountains to care for their needs. Surface water caught in reservoirs was hard and salty from the alkali soil in the area. Well water contained about 3,000 ppm of solids and resisted all methods of treatment known at the time for making it palatable.

But fortunately out of the war years came a new development that gave the village of David a weapon as stout as the biblical David's sling. This consisted of the ion exchange method, which can remove virtually all dissolved solids from water.

As has been well known for many years, most water difficulties stem from dissolved salts that break up into ions. To remove them, investigators have developed two sets of exchangers, one to remove the positive or cation, and the other to remove the negative or anion. In this way, if water passes through beds of both these exchangers, it will leave behind all dissolved solids.

David, though somewhat dubious as to the success of the experiment, nevertheless decided to give the new method a trial. As a result, officials installed a "Filt-R-Stil" unit capable of producing about 1,000 gallons of potable water per hour. This equipment, manufactured by American Cyanamid Company, reduced the solids content from 3,000 in the raw water stage to an average of 400 in the distribution system, None of the solids was calcium or magnesium hardness.

The cost of the water trucked in ran to an average of $1,600 per month. The cost of the Filt-R-Stilled water is about $400, or 25% of the previous figure.

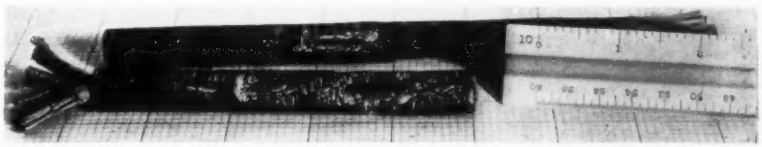
Raw water is pumped from wells to a 20,000-gallon tank (at left on the hill). It flows by gravity to the treating house (center) containing the Filt-R-Stil potable water unit. The treated water is pumped to the 20,000-gallon tank (at right on the hill) and stored until needed.

Ever Have This Maintenance Problem?

INTERESTING as Wichita's water supply development has been (see page 89), this does not mean that Superintendent Bob Hess' subsequent operation has been without interesting incidents. The long single pipeline affords one. The Wichita maintenance crews watch this as a mother does its baby and have streamlined their repair procedure—for breaks occasionally do occur in this pipeline—so that repairs can be made as promptly as a mother changing a baby's diaper, a messy job, nonetheless one that is performed quickly and thoroughly.

But only recently have these crews been running up against another troublesome maintenance task. At annoying frequencies they observed power interruptions on certain lines and, after running them down, found that they were the result of red squirrels who had taken a curious liking to the lead sheathing on the electric cables that operate remote-control equipment. Despite the fact that such a meal, if carried far enough, comes to a shocking climax, this still has not convinced the squirrels to change their dietetic habits.

Superintendent Bob Hess solved the problem by installing metal guards on each pole, trimming all trees close to the line, and buying a .22-calibre rifle for Frank Smith, the Well Supervisor's oldest boy.



Lead cable after it has been used for a meal by ground squirrels in Wichita.

How Do Forests Function to Protect Watersheds?

A FOREST on a watershed must be operated with the idea in mind that it is being held for water purposes and not for forestry practices, John M. Heilman, forester for the Newark, N. J., Division of Water, pointed out before the New Jersey Section of the American Water Works Association meeting in Atlantic City recently.

A properly managed forest serves to make the watershed into a "sponge" that will absorb spring rains and feed them slowly into storage reservoirs. The trees make it possible for the soil to hold more water, since the roots of the trees work the soil and make it more pervious.

One must recognize that the trees themselves transpire and that the more trees on the watershed, the more water is lost through transpiration. However, the trees perform the very valuable function of controlling soil erosion, thereby preventing loss of storage capacity in the impounding basins.

Adequate fire protection is a vital consideration in forestry work. A proper attitude on the part of local residents that are not employes of the water department must be developed so that they will help keep fires down.

Although the primary function of the forest is that of protecting the watershed, the income possibilities of the forest should not be overlooked. In 1943 the Pequannock watershed, serving the Newark area, yielded its greatest income when $9,587 was realized from the sale of Norway spruce for Christmas trees. The spruce had been planted from seven to eleven years earlier and averaged about 7 feet in height. The sale involved trees that would otherwise have died in the natural competition for survival.

Mr. Heilman expects that the Pequannock watershed will eventually yield an annual cut of four to six million board feet of lumber and six thousand cords of wood.

Over 100,000 MULTIPLE-COIN miller meters

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. . . THE NO. 1 CHOICE ALL OVER AMERICA

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Sewerage and Sewage Treatment

The 1947 Outlook for Sewage Treatment Financing

WITH Congressional efforts to help end the pollution of navigable waters culminating last year in a compromise bill, HR 6024, which, like most compromises of a subject that has strong and militant supporters, produced no harmony and with the compromise dying ingloriously without emerging from the floor of the committee; and with yet another session of Congress before us, the question presents itself as to whether this Lazarus of the stream pollution abatement field can arise from the dead and make itself known and recognized in the halls of Congress.

During these troubled days, the answer is that it probably cannot. With matters of immediate national importance before us, with internal labor strife and external diplomatic discord, with the executive and legislative branches being of opposing political loyalties, an appeal at this time to make our navigable streams free of harmful pollution is likely to fall on unresponsive congressional ears. Moreover, with the present temper of our legislators aimed towards the over-all reduction of governmental expenses, the possibility of grants-in-aid for the construction of sewage treatment facilities seems remote. However, the solution of the problem on a local scale, preferred by many, will have an unhampered and unassisted opportunity.

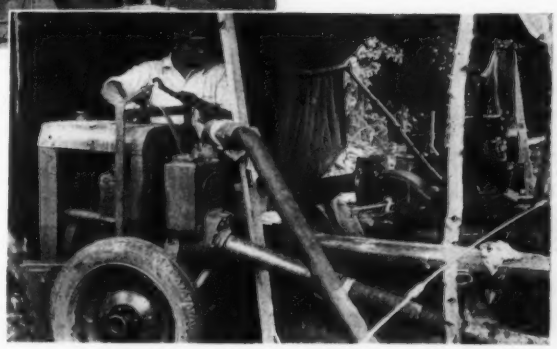
The problems may be further cleared on a local scale if both municipal officials and the public come to recognize that sewage treatment is only a phase of water supply and treatment—if they recognize more clearly that sewage is merely used water and that sewage treatment is merely the conditioning of this water so that one city will not be a nuisance to its neighbors.

Still another factor that must be understood clearly by the public and municipal officials alike is that sewage treatment can be paid for by an increase in the water bill. However, this increase must be substantial. The cost of reconditioning this used water may be as much as, and may be more than, the cost of collecting and distributing it in its pure form. If the public can accustom itself to a doubled water bill and if industry generally will accept a charge based on the strength and volume of its sewage, most financing problems will disappear, and sewage works can proceed without Federal stimulus.

Union, N. J., Makes Emergency Repairs

Right: George Kling's emergency repair crew assemble the Flexible sewer rods preparatory to cleaning the clogged line.

Left: The line is partially cleaned, with the cutting worm just visible.



Right: An operator attends the 3-inch centrifugal pump; shown also, diaphragm pump.

ONE Sunday night last July, George Kling, superintendent of streets and highways, Union Township, N. J., received a call that a sewer was flooding the basements in one of the residential districts. After giving temporary relief by pumping out the sewer with an old Civilian Defense trailer pump and a 3-inch Novo Centrifugal Pump, he tried to get into the sewer and see what was causing this difficulty.

On Tuesday of that week a heavy rain came that created a flow large enough to be too big for the pumps to handle. The problem was aggravated greatly by cloths in the sanitary sewer main clogging the pump strainers. By the time he had called into action Fire Department pumps, another Civilian Defense, and two other smaller pumps, he had determined that a portion of the sewer had collapsed in an area where quicksand complicated operations and that something had to be done very quickly.

Thursday, Friday and Saturday saw Superintendent Kling and a small crew bring the problem under control. He excavated the area involving the collapsed sewer by dragline, sheeted the line itself to prevent the intrusion of quicksand, cleared the debris from the sewer by using his Flexible Sewer Cleaning Rods, placed the new pipes and encased them in concrete, and then opened the sewer for general use. The time that elapsed for actual repairs totalled only six hours. The principal difficulty throughout was in keeping the main sewer line, which services six hundred families, in operation during the period of excavation.

Superintendent Kling reports that of invaluable assistance to him was his 450-watt Homelite electric generator powering four 100-watt floodlights, since much of the work necessitated working until midnight.

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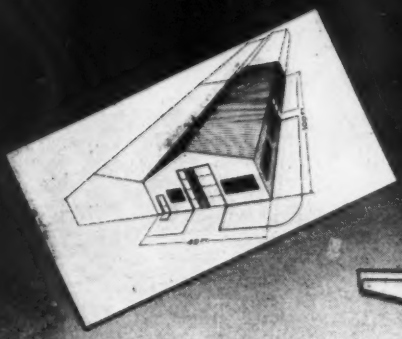
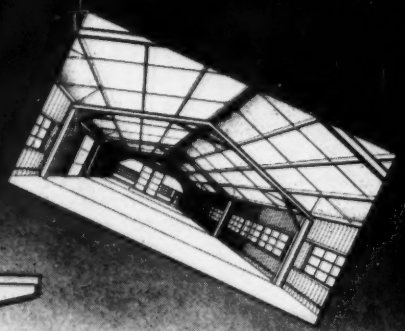
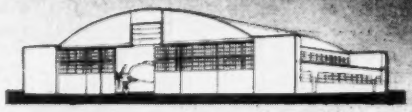
AIRPORT BUILDINGS

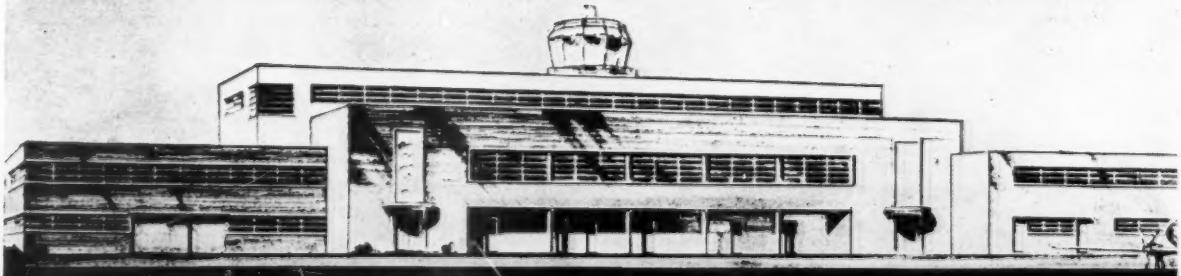
by

LURIA









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Mechanical Sanders Gain in Popularity

BOTH Milwaukee, Wis., and Pittsburgh, Pa., expect better control over icy street intersections this winter through the action of mechanical spreaders that apply abrasives treated with chlorides to increase their effectiveness.

Pittsburgh, last year, purchased twelve Flink hydraulic spreaders that will be used this winter, Director of Public Works James S. Devlin reports, in connection with ice-control work.

On July 1 of this year Milwaukee contracted for five Flink spreaders to be fitted to five new Diamond T trucks. P. M. Johanning, special mechanical engineer for the City of Milwaukee, states that these will be used for spreading cover sand on freshly oiled streets in summer as well as for ice-control work. The spreaders throw the material forward and down at low level and at the same time can cover two lanes with one truck without scattering.

The present set of spreaders supplements five that Milwaukee had purchased previously and seventeen that the Milwaukee Electric Railway and Transport Co. uses.

Used Vitamin Convoy

THE NEW YORKER reports in its issue of November 23 that a garbage-collection company in Burlington, Vt., calls itself The Used Vitamin Convoy.

Leaves No Leaves

By M. U. SNODERLY
City Manager
Johnson City, Tenn.

THE task of clearing leaves from residential streets has been simplified in Johnson City, Tenn., by the use in a garbage truck of a 12-inch exhaust fan that pneumatically draws the leaves into the truck.

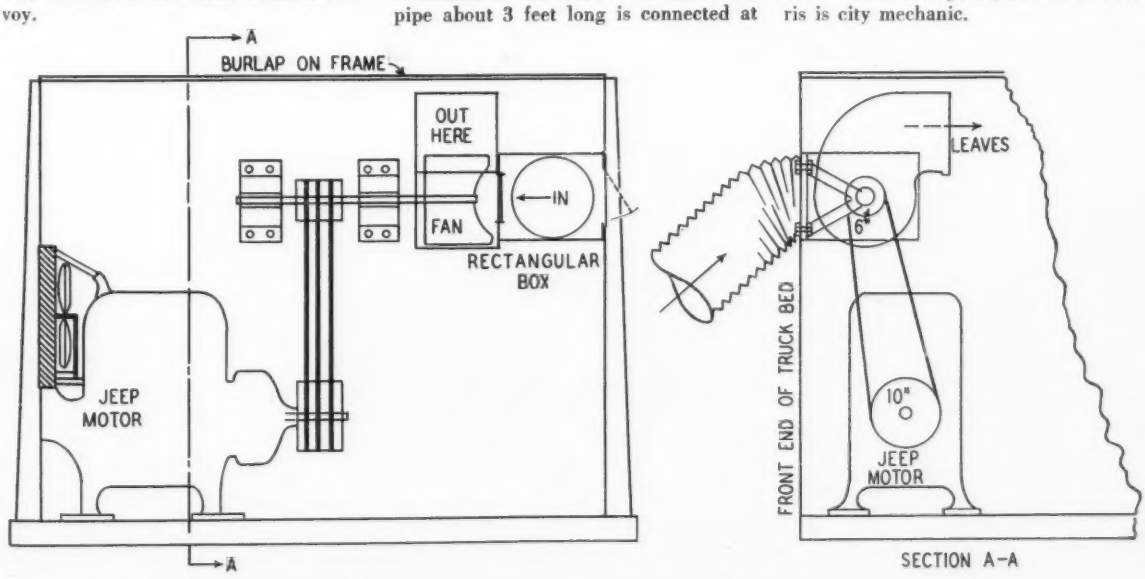
A rebuilt jeep motor placed in the front of the dump-truck bed in the corner back of the driver's seat provides power for the blower. The truck bed is steel and is 5½ by 7 by 12 feet. A rectangular opening the size of the radiator, cut from the side of the truck bed, serves as an air intake for the motor radiator. The motor transmits power to the fan through three 80-inch V-belts connected to a 10-inch pulley on the motor shaft and a 6-inch pulley on the fan. The base of the fan is bolted to the front wall of the truck bed over the motor so that the pulleys are in line. This places the fan suction facing the corner to the right. In this corner is a metal box, one side of which was connected to the fan suction. On the opposite side is a clean-out opening to the outside with a hinged door. On the front side of the box is attached a 45° elbow which is on the outside of the truck bed. A 12-inch spirally reinforced flexible hose, 15 feet long, is connected to the elbow. An aluminum pipe about 3 feet long is connected at the end of the hose. With this amount of hose, leaves are easily picked up from the parkways.

The Johnson City leaf loader.

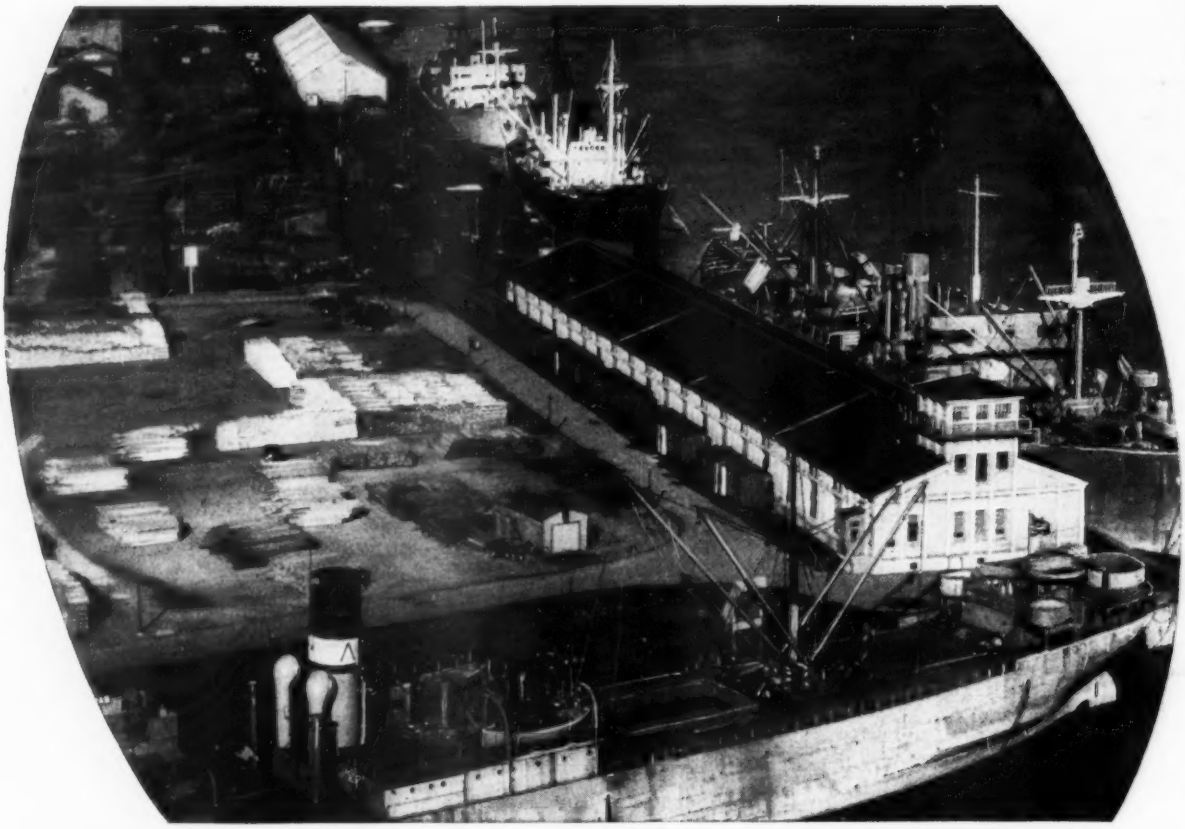
A wooden box is built around the motor, pulleys and belts, but the fan is left open. The discharge opening of the fan is near the top of the truck. The top of the truck bed, as well as the space at the back of the bed above the tailgate, is covered with burlap. The jeep motor, of course, is operated only during the time when leaves are being loaded.

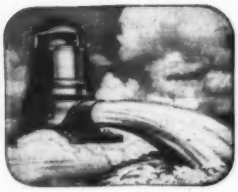
The outfit collects and transports five or six loads of compacted leaves of 15 cubic yards each day. We have had no difficulty in dumping the leaves. Two men operate the outfit; one drives the truck, and the other handles the hose.

J. B. Curl is supervisor of garbage collection and disposal, and R. B. Morris is city mechanic.



This line drawing shows how the motor and blower were mounted in the truck at Johnson City.





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Layne Vertical Turbine Pumps are now available in sizes to produce from 40 to 16,000 gallons of water per minute. Their high efficiency saves hundreds of dollars on power cost per year.

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Trois Rivieres, Quebec is ANOTHER LAYNE CITY

—Mecca of skiing, fishing, canoeing, and hunting sportsmen, Trois Rivieres as Canada's third oldest and third largest port is further distinguished industrially as being the world's biggest newsprint manufacturing center. Trois Rivieres is showing solid and extraordinary growth. Seeking greater economy and better water, this fine Quebec city is turning to Layne Well Water Systems. Layne Water producing equipment is already serving military camps, airports, ammunition and aluminum foil plants —as well as the nearby city of Cap de la Madeleine.

Throughout other parts of Canada, hundreds of Layne Well Water Systems are also serving cities, factories, military and ammunition plants, and a very wide variety of general municipal and industrial uses.

Neither geographic location nor climatic conditions affect the high efficiency, long life, low operation cost or unmatched dependability of the world famous Layne Well Water Systems. For literature, address

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Concrete Paving with Asphalt Equipment

EVEN though it is a commonplace occurrence in California, many engineers still express surprise whenever they hear of the laying of a lean, low-cement content concrete base with asphalt equipment, as was done in the Rosemead-Lakewood Boulevard project (see page 80). One engineer said that it is like using a feather duster when you should use a broom.

Nevertheless, the processing of cement-treated bases with a standard asphalt plant is viewed quite calmly in California. Some minor adjustments must be made in the plant, such as removing the sand screens and adding a water meter of some type. The Barber-Greene paving machine has also been used successfully on several occasions in California for spreading plant-mixed type of cement-treated base.

However, the use of any spreading device for cement-treated bases is complicated by the necessity of early compaction, as results on the Rosemead-Lakewood Boulevard showed. The work requires early compaction in order to prevent a tendency to develop harmful stratification and blistering. Material added to correct low spots usually scales off and has been known to cause failures in bituminous surfacing. Consequently, one cannot underestimate the need for the spreading operations to be on a "single pass" basis and to be completed with the least possible delay.

One cannot avoid noting that the soil-cement sub-base produced a ragged uneven grade which was corrected by the cement-treated base that was Barber-Greene-laid.

Asphalt Institute Names New Officers

THE new president and chairman of the executive committee of the Asphalt Institute is C. Wayne Barbour, Allied Materials Corporation, Oklahoma City, Okla. George R. Christie, Socony-Vacuum Oil Company, Inc.; Inghram Grayson, Lion Oil Company; Raymond Harsch, Shell Oil Company, San Francisco, Calif.; James J. Kelly, Kerr-McGee Oil Industries, Inc., Fenter Refining Division; D. N. Myers, Byerlyte Corporation; and J. S. Sawyer, Shell Oil Company, New York, complete the committee.

Bernard E. Gray was re-elected general manager-chief engineer; and Herbert Spencer, secretary of the Institute. F. V. Widger, Witco Chemical Company, was elected treasurer; and John N. Smith, Socony-Vacuum, assistant treasurer. The five vice-presidents elected are as follows: Division I: Atlantic-Gulf Section, J. S. Sawyer; Division II: Ohio-Great Lakes, D. N. Myers; Division III: Mid-West, Inghram Grayson; Division IV: Southwest, James J. Kelly, and Division V: Pacific Coast, Raymond Harsch.

We Need More Highways

A Guest Editorial

OUR country's need for improved roads and streets is great. Contrary to the shortsighted viewpoint of many, our highway system is only started. The need for more and better roads will be desperate long before the automotive industry satisfies the backlog demand for motor vehicles.

The wartime ban on roadbuilding has aggravated this somewhat. We probably have lost from 30,000 to 40,000 miles of modern highways that would have been built had the war not intervened. But even when we have made up this deficit, we will still have achieved only a fraction of the job required. The truth is that we are still in the cart and buggy stage so far as roadway preparation is concerned.

The 40,000-mile interstate highway network, now under construction, with its important and substantial portion elevated to municipal improvements, represents an initial attack on a critical part of the problem. But this, too, is an inadequate measure of the need. The nation must raise its sights and push for a complete, modern effort in highway development with full emphasis on well-designed urban expressways if it is to realize the possibilities and dividends of a motor age.

Fortunately, there is available for this task a construction industry of maturity and talent, and it is supported by a highly developed industry of machinery and equipment suppliers. The pioneering in scientific highway construction was largely concluded in the 1920's. The super highways of the 1930's have confirmed the wisdom of expenditures for the development of modern motorways. The life cost per vehicle-ton-mile of a fully engineered highway has been shown to be lower than the true cost of the patchwork roads that just grew, and that are constantly worked over and yet remain a menace to people and machines.

C. H. LEHMAN
Executive Vice-President
Blaw-Knox Co.
Pittsburgh, Pa.

Rockford, Ill., Expands Residential Streets

The first step in a program that will furnish new subdivision streets in Rockford, Ill., goes forward when this Allis-Chalmers AD motor trailer excavates for curb and gutter.

TWELVE KEYS to Steel-Service

Ryerson Steel-Service plants now stand in twelve great cities—key points covering the nation's principal steel markets. Cooperating fully, the twelve-plant Ryerson system means broader facilities, shorter shipping distances, and the assurance of prompt delivery of all products in stock.

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How to Fight Polio

OUT of San Antonio's experience in fighting poliomyelitis (see pp. 69), what can a municipal official learn that he can apply to his own city? To analyze this more clearly let us first try to understand the polio virus. It is elusive; it has no simple identifying test. Its detection calls for a complex test that must be run by skilled technicians. The virus has never been found in drinking water but has been detected in sewage within 300 feet of the point of discharge. This does not mean that it is not in water or sewage. More thorough tests, not yet developed, may disclose it. Some tests link the fly as a possible carrier of polio, although investigators have yet to find a conclusive test that positively links the fly to a case of polio in a human being.

Filth may be a factor. However, in the Miami, Fla., area a disproportionate number of children from higher-income homes became afflicted. Diet may be a factor, as may be climate, temperature, and barometric pressure. As one investigator said somewhat wearily, he could, if he wished, make a convincing case on the color of a person's hair or the length of his nose.

Without direct evidence, indirect evidence is our next best guide. What offers the best possibility for prevention and control? To our minds, more thorough sterilization of our water supply is one, whether this be through superchlorination, ozonization, or the use of chlorine dioxide. Another is that of eliminating the fly.

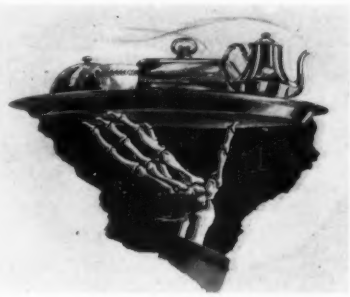
The practice of superchlorination to produce a free chlorine residual has at least chalked up some marks in its favor. Even though the polio virus has never been detected in drinking water, epidemiologic records indicate that in cities carrying free chlorine residuals the incidence of poliomyelitis has been low. In view of the many other benefits that this type of chlorination provides, a city would be foolish not to adopt it and get this added protection.

Evidence against the lowly and persistent fly also is circumstantial rather than direct. But, nevertheless, the evidence is there, and an aggressive municipal sanitation program coupled with fly-killing, using DDT in some fashion, produces many municipal benefits. Here again the benefits extend beyond the poliomyelitis field. San Antonio health authorities noted a drop in other intestinal disturbances at the same time the DDT fogging took place.

Although the scientist is not ready to convict either the water supply or the fly as the carrier of the virus, he will readily agree that suspicion points toward them, and preventive measures are accordingly well justified.

How Sanitary Are Your City's Restaurants?

RESTAURANT sanitation came under critical study in the December issue of the *Woman's Home Companion*, with an article that should make the average citizen as well as the municipal official think. Here are some of the highlights in the article written by Howard Whitman.



COURTESY OF WOMAN'S HOME COMPANION

More than 25% of all food produced in the United States is eaten in restaurants. Sixty-five million Americans eat at least one meal a day in public places. They have a right to expect freedom from disease.

What Investigation Disclosed in Various Cities

New York City in recent months launched a spectacular cleanup. In some of its swankiest eating places, food was found exposed to rats and mice; garbage was uncovered, its filth carried to the cooking tables by flies and cockroaches. Investigators found improper refrigeration, glasses ringed with germ-laden lipstick, spoons and forks ridged with food and saliva, filthy sterilization equipment, and food stocks nested with bugs and weevils.

A city in Alabama examined restaurant glasses and found their seemingly clean surfaces swarming with bacteria, 40% of which were pathogenic. In Ohio inspectors found rat excreta in flour bins.

In an Idaho restaurant the chef and two other kitchen helpers were found to be disease carriers. In Connecticut a health officer was shocked into action when two of his personal friends contracted syphilis from the rims of contaminated glasses. The U. S. Public Health service reports that the syphilis spirochete has been found on a glass a half hour after an inadequate rinsing.

An investigator in Pennsylvania found a tea-room scooping leftover butter off dirty dishes and reshaping it into tabs for the next customer, gathering scraps of bread left by diners and using it for bread pudding.

In a Utah restaurant a pot of gravy was virtually floating with staphylococci. In Washington a baker with infection under two of his fingernails was found kneading dough.

Dr. W. L. Mallman of Michigan University examined drinking glasses used in taverns and found one out of seven with trench-mouth spirochetes. The Public Health Service, using mobile laboratories, examined 50,000 utensils from 5,400 eating places in 156 cities and found only 28% free from dangerous amounts of bacteria.

Twelve people in the state of Washington were taken violently ill with gastroenteritis. The search for clues turned up Boston cream pie as the one dish all of them had eaten. The chef merely had cut a finger. He was flabbergasted when an inspector later reported that enough staphylococci was in that little cut to poison a thousand pies.

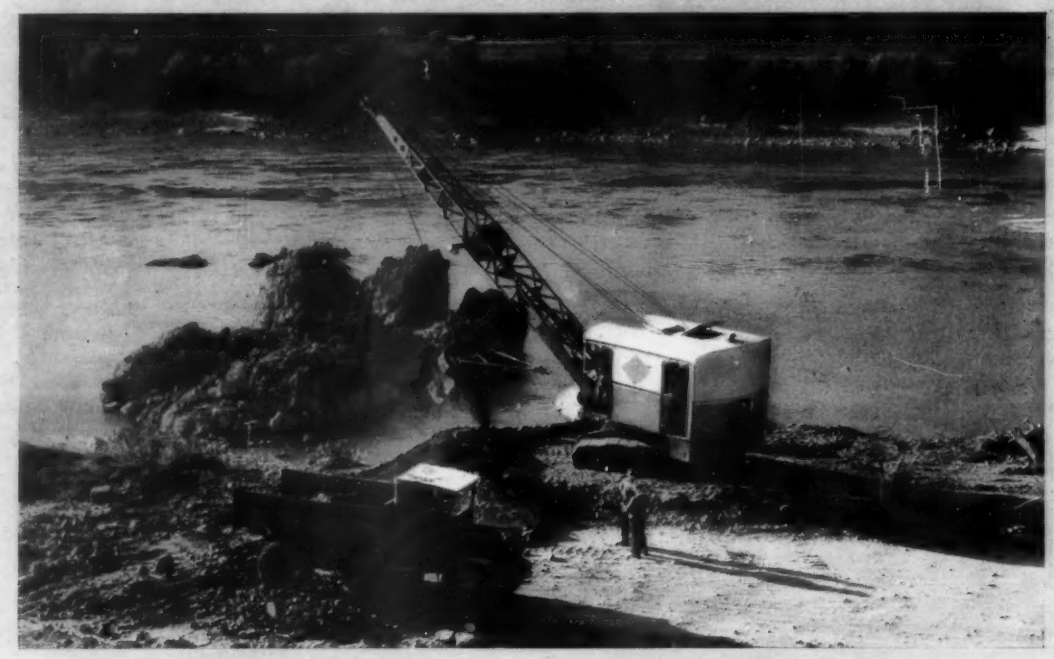
To Kill Bacteria

To kill bacteria, dishes must be immersed in water at 180° F. for at least two minutes. That's much hotter water than a dishwasher can put his hands into. He must use a rack to submerge them or use a dishwashing machine. If you see a dishwasher working by hand, you know that, unless he has a chemical disinfectant, he is merely giving the microbes an invigorating bath, perking them up for a trip down your throat.

Every community ought to have a food handler's school with required attendance by restaurant workers. First rate courses have been given in Fargo, N. D.; Temple, Tex.; Bristol, Va., and Flint, Mich.

Every community needs a staff of trained inspectors. It takes an expert to know where to look for hidden filth. A staff capable of combing every restaurant is fantastically economical compared to the cost of epidemics.

Give HEAVY-DUTY ENGINES HEAVY-DUTY PROTECTION



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Please check over the list of interesting free catalogs on this and following pages. To obtain the literature you want, write direct to the manufacturers, or circle the indentifying numbers on this coupon and mail it to The American City Magazine, 470 Fourth Ave., New York 16. We will see that catalogs are sent to you without expense or obligation.

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Loudspeaker With Low Power Requirements

349. Fire and police departments, as well as municipal airports, will be especially interested in information from Dilks, Inc., Norwalk, Conn., on the Vocal-Aire. This new loud-speaker system requires only 20-watt power to send sound a mile or more over the noise of traffic and working apparatus. It is especially suitable for controlling groups and for paging and announcing work.

Equipment for Sewage Treatment Needs

350. If you are looking for information on a complete line of equipment for municipal sewage treatment plants, the American Well Works, 100 No. Broadway, Aurora, Ill., will be glad to send you literature as follows: Bulletin 258 on mechanically cleaned screens; Bulletin 249 on grit channels and grit settlers; Bulletin 260 on grease flotation unit; Bulletin 253 on sludge collectors and telescoping sludge draw-off valve; Bulletin 254 on aerators; Bulletin 257 on rotary distributors; and Bulletin 255 on rapid-mix turbine and Downflo flocculation unit.

How to Find Buried Pipe and Stop Leaks

351. If your municipal water department is not already equipped with apparatus for the easy detection of water leaks and buried pipe and cable, you will be interested in data from the Fisher Research Laboratory, Inc., Palo Alto, Calif. Learn about the sensitivity of the M-Scope water-leak detector that permits it to spot trouble through concrete, as well as the many other features that make it a "must" in your department.

Measure Large Water Flows Accurately

352. If your cold-water metering involves large flows, you will be interested in details on the construction features of the IH turbine from Worthington-Gamon Meter Co., 296 South St., Newark 5, N. J. This is available in either current or velocity type, in capacities up to 2,800 gpm, and in sizes 2 to 8 inches.

How to Repair Leaks In Cast Iron Pipe Easily

353. Leaks in cast iron pipe need not be such a headache if you know about the Smith-Blair leak clamp. Smith-Blair, Inc., South San Francisco, Calif., will send you complete details on this clamp and point out its advantages, including ease of installation, flexibility, better sealing, safety, and almost 100% wrap-around.

Simplify Your Street Lights

354. Joslyn offers an integral flange head on which you can assemble practically any luminaire from 1,000 to 10,000 lumens. Advantages are as follows: no adapters necessary; positive seal between head and lower assembly; easy socket adjustment; and easy conversion to other types of luminaires. For full information, write Joslyn Mfg. and Supply Co., 20 North Wacker Drive, Chicago, Ill.

Master Valve Control for Filters and Softeners

355. Master valve control for gravity and large-size pressure filters or zeolite softeners is described in a booklet issued by The Permutit Co., 330 West 42 St., New York 18, N. Y. Automatic control, made possible through the use of a master valve, regulates rate of flow, prevents waste of water in the operation of backwashing and rinsing, and maintains the zeolite or sand bed in clean, active condition. This installation, according to Permutit engineers, is especially suited for municipal water works or large water treatment plants where one man does not have sufficient time to handle all operations with manual valve control.

Where to Use Flow-Responsive Equipment

356. In your water works do you add any metaphosphate corrosion inhibitors, or have you explored the use of the super-powered oxidizer, chlorine dioxide? In handling boiler-feed water do you adjust the pH or remove hardness and dissolved oxygen? If you do, or if you are considering any of these, you ought to get the new catalog on flow-responsive equipment issued by %Proportioneers, Inc.%. The catalog explains clearly how this type of equipment works and contains information helpful in selecting exactly the right size of unit to fit each plant requirement. Ask for Bulletin #1200 from %Proportioneers, Inc.%, Providence, R. I.

Bituminous Fibre Expansion Joint

357. Here is an expansion joint that is resilient, non-extruding, free from bumps, and durable. It adheres to concrete and is easy to cut, light in weight, and easy to handle. The Celotex Corp., Chicago 3, Ill., will send you literature on Flexcell, its bituminous fibre expansion joint. Especially suitable for pavements, sidewalks, curbs, gutters, bridges, grade crossings, airport runways, and municipal tennis courts, it keeps these surfaces free of bumps and unsightliness, keeps joints closed, re-expands on release of compression, thus preventing open crevices, is easily handled, and can readily be cut with an ordinary hand or power saw.

A Fireman's Aid in Evacuating People

358. The Evacuator Corporation of America, 922 Book Bldg., Detroit 26, Mich., has devised some new equipment designed to aid in saving lives in a fire. A booklet from this company will show you the safety features of this fire-resistant canvas duck chute with sides that make it practically impossible to fall out. The speed with which it effects rescues is said to be eighteen times as fast as descent by stairway. Model A is for high buildings; Model CA, for vertical distances not over 30 to 40 feet; and Series P, for permanent installation in buildings.

Compressor Takes Little Of Truck Body

359. The Auto-Air is a compressor that can be mounted on any standard truck and occupies only one-third of the truck. Davey Compressor Co., Kent, Ohio, will send you catalog E-172 giving complete details on this equipment, available in 60, 105, 160, 210, or 315-cfm capacities. It is driven from the truck's engine through the Davey heavy-duty power take-off and can be moved from one job to another at truck speed.

Pumps for Every Need

360. Any pumping problems in your community can be met by Fairbanks, Morse & Co., Pump Division, Chicago 5, Ill. They have turbine, centrifugal, propeller, and deep-well pumps available to meet your necessities.

Novel Memorial Tablet Allows for Insertions

361. Write to Cincinnati Metalcrafts, Inc., Dept. AC, 34 & Robertson Sts., Cincinnati 9, Ohio, stating your organization, the number of names to be honored, and the desired inscription, and they will send you literature and recommendations for the type of memorial best suited for your purpose. Of especial interest will be the new "Opening Door" roll of honor. All bronze, it is easily installed in inside or outside walls and has swinging bronze sheets which open like a book and can accommodate up to 4,400 names.

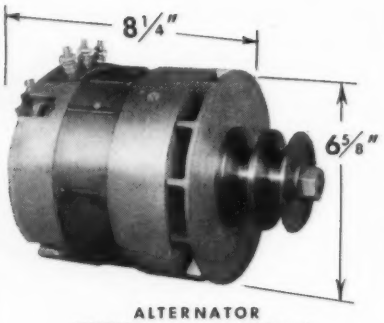
This Pivot Valve Works More Easily

362. Bulletin No. 40 from The Chapman Valve Manufacturing Co., Indian Orchard, Mass., will give you complete details on its pivot valve, an improved type of butterfly valve. Allocation of operating force to the proper point takes out the deflection of the lower half of the disc.

(*Continued on page* 21)

5 IMPORTANT REASONS

why it will pay you to investigate this new *high-output* LEECE-NEVILLE GENERATING SYSTEM



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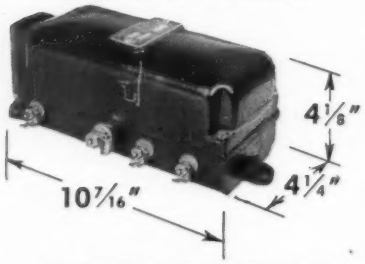
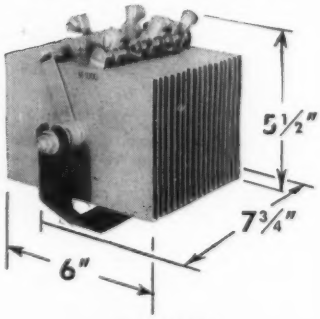
RATING . . 14 Volts—100 Amperes



3-ELEMENT VOLTAGE REGULATOR
WEIGHT . . . . . 4¾ Pounds
RATING . . 14 Volts—100 Amperes



RECTIFIER
WEIGHT . . . . . 7 Pounds
RATING . . 14 Volts—100 Amperes

1 This 12-volt system gives you *higher* output at slow and fast speeds than D-C equipment—when correct drive ratio is provided 100 amperes can be produced at idle engine speed, as well as top engine speed. Here's generating that can save so much on battery maintenance, prolong battery life, permit addition of accessories without overloading.

2 Alternator, voltage regulator and rectifier together weigh 60% less than generator-regulator combination of D-C system of comparable rating.

3 Alternator occupies less space than generator of conventional D-C system.

4 Simplicity of Alternator design (no commutator with commutating brushes, no rotating armature windings, no lubrication problem) means a long life of trouble-free service.

5 Rotation can be reversed without affecting system connections or performance and system can be used for series parallel circuits where 24-volt cranking is required.

On many types of municipal vehicles where electrical accessories or special operating conditions require high output at low speeds, high speeds or both to keep batteries up, this new Leece-Neville 12-volt* generating system should not only answer the problem, but pay for itself out of savings many times over. Installed on equipment having radio, it holds the radio noise level to an absolute minimum. Write today for further details. *The Leece-Neville Company, Cleveland 14, Ohio.*

*Similar 3-unit system available for 6-volt service. Rating: 60 Amperes, 420 Watts. System Weight: 40 Pounds.

LEECE-NEVILLE

Pioneer and STILL Quality Leader

CRANKING MOTORS • GENERATORS • VOLTAGE REGULATORS • SWITCHES

Stop—Check and Mail

Use Coupon on Page 19

Know Your Water Meters

363. Do you know what makes a water meter precise? The Pittsburgh Equitable Meter Division, Rockwell Mfg. Co., Pittsburgh 8, Pa., will be glad to send complete data on the precision manufacturing methods of its Arctic and Tropic meters—data which will help water works officials judge construction and performance of their meters.

Equipment to Solve Water or Sewage Treatment Problem

364. A complete line of equipment for solving your water, sewage, or trade waste disposal problems is maintained by Infilco, Inc., 325 W. 25 Pl., Chicago 16, Ill. If you write the company and tell them about your needs, you can receive information about such equipment as the Accelator, the stellar filter, the sewage sampler and the Accelo-filter.

Bulletin On Conditioning Of Water

365. Modern methods and apparatus for conditioning water and other liquids are described in a 60-page bulletin which has just been completed by Liquid Conditioning Corp., 423 W. 126 St., New York 27, N. Y., manufacturers of Liquon equipment and Liquonex materials for water softening and clarification. Bulletin G describes all the many different types of water conditioning processes and explains the applications, advantages, and limitations of each type. Tables listing the various kinds of gaseous and solid impurities and showing their effects, the limits of tolerance for various purposes, methods of removal and residual amount of each impurity after treatment, and a comparison chart, showing the chemical results produced by various water treatment methods, are also included.

Microfilming—Now

366. Microfilming not only preserves records, but decreases storage space by 160 to 1 as well. You can do this work with your own forces or have the job done for you. Both the equipment and the skilled personnel are available now. Moreover, a new method of finding a particular microfilmed record has cut searching time by 86%. The facts about this available equipment or service are given in an 8-page illustrated pamphlet entitled "160 to 1." Address Remington Rand, Inc., 315 Fourth Ave., New York 10, N. Y.

Asphalt Paving Products

367. Street superintendents will be interested in data from The Texas Co., Asphalt Sales Dept., 135 E. 42 St., New York, N. Y., on Texaco asphaltic products, how they have served communities, and how advantageously they can be used in your street paving operations.

How to Regulate Traffic

368. If you are anxious to obtain traffic regulation and better parking facilities in your town, you will be interested in information that the Duncan Meter Corp., 835 No. Wood St., Chicago 22, Ill., will send you on its Miller parking meters.

An Answer to Your Chemical Needs

369. Any chemical needs around your plant can be simplified by writing Pittsburgh Plate Glass Co., Columbia Chemical Division, Fifth Ave., at Bellefield, Pittsburgh 13, Pa. You can receive from them information on such essential chemicals as soda ash, caustic ash, caustic soda, liquid chlorine, calcium chloride, and others.

Aerial Surveys

370. The Fairchild Aerial Surveys, Inc., 224 East Eleventh St., Los Angeles 15, Calif., aerial photogrammetric engineers, will be glad to help you plan a survey through its consultation service. They have made domestic and expeditionary surveys of forestry, water waste, highways, traffic, utilities, pipe lines, taxation, harbors, flood control, and city planning.

What Trolley Coaches Will Do for You

371. Apparatus Dept., General Electric Co., Schenectady 5, N. Y., will send you facts pointing out why trolley coaches can do much toward reducing traffic congestion in your city. The company points out that they help increase public-transit riding, have large passenger-per-hour capacity, are maneuverable for loading and unloading at the curb, pass stalled vehicles easily, and are able to hold their own in busy traffic lanes, thus helping speed the traffic flow.

Bronze Plaques

372. International Bronze Tablet Co., Inc., 36 East 22 St., New York 10, N. Y., will send you a copy of Catalog AC. This contains over 150 photographs of genuine solid bronze tablets for war memorials, honor rolls, and other purposes.

No Need to Replace Leaky Pipe

373. Water works superintendents will be interested in the emergency pipe clamps that M. B. Skinner Co., South Bend 21, Ind., manufactures for stopping leaks in pipe lines. This repair clamp is said to be easy to apply, saves the cost of new pipe, and eliminates the necessity of tearing out old and putting in new pipe.

Portable Asphalt Plants

374. Street and airport construction and maintenance men will be interested in literature from the White Mfg. Co., Elkhart, Ind., on its line of portable asphalt plants.

Let Gunite Save Your Masonry

375. Municipal officials will be interested in a 72-page general bulletin, D2300, from the Cement Gun Co., Allentown, Pa., describing the use of Gunite. Gunite is used for the rehabilitation or construction of dams, reservoirs, tunnels, and other forms of masonry work.

Learn About These Mechanically Stoked Incinerators

376. You can get several instructive bulletins from Nichols Engineering & Research Corp., 60 Wall Tower, New York 5, N. Y., that will tell you about the mechanical stoking feature that eliminates exhaustive stoking problems and produces an improved residue. These incinerator engineers not only design incinerators, but also construct them.

Compact Street or Runway Rollers

377. Officials in charge of airport runway and street paving jobs will be interested in information from the Lewis Manufacturing Co., 415-431 Hoefgen Ave., San Antonio 6, Texas, about the Pierce-Bear 3½- to 5-ton roller. This compact, easy-to-operate machine has rear rollers that give heavy-duty compression. It also has a built-in water tank for wet rolling.

What Tractors Can Do In Your Municipality

378. Data on tractors for municipal work are available from The Oliver Corp., Industrial Division, 19300 Euclid Ave., Cleveland 17, Ohio. Information is given concerning the steering principle which provides constant flow of power to both tracks at all times, greater maneuverability, maximum pulling or pushing power, and greater load-handling ability. The tractor, combined with a bullclam, is used by municipalities to pack down refuse and cover it with dirt and to do leveling work around sanitary fills.

Accurate Measurement of Main-Line Flows

379. If you have any doubt about the amount of water going into your distribution line, write R. W. Sparling, Box 3277, Terminal Annex, Los Angeles 54, Calif., for bulletin 309. This discusses the use of Sparling main-line meters for accurate measurement of main-line flows.

Curves and Parked Cars No Problem Here

380. Parked cars, dead-end streets, alleys, and congested areas need no longer be a problem to you with the Patrol Sweeper. Austin-Western Co., Aurora, Ill., will send you information on the short wheelbase and three-wheel design of this sweeper that makes for greater handling ease, especially around parked cars and short-radius curves.

Outdoor Water Service Devices

381. Muncipalities interested in outdoor water service devices will want information available from The Murdock Mfg. & Supply Co., 426 Plum St., Cincinnati 2, Ohio, on its line of drinking fountains, hydrants, and hose boxes. The hydrants are available in the anti-freezing compression model, the large anti-freezing type, 1½ to 2 inches, and a self-closing anti-freezing model.

Test Mains Before You Lay Them

382. If you are interested in testing cast iron, steel, transite, soil, and concrete pipe lines as you lay them, and without the necessity of valves, you will want a circular and complete information from the Test Plug Mfg. Co., Skokie, Ill., on its new test plug. This equipment helps eliminate open trenching and accompanying hazards. It is especially useful for testing reclaimed pipe, valves, and fittings.

Bullclam for Sanitary Fill

383. Here is a way to eliminate unsightly dumps and provide a neat, healthy, economical method of refuse disposal. Drott Manufacturing Corp., 4344 N. Green Bay Ave., Milwaukee 12, Wis., will send you "Answer to Your Waste Disposal Problems. . . . With the Drott Bullclam Shovel" to give you a more complete story of the Drott bullclam shovel method of sanitary fill and its advantages.

Water Works Brass Goods

384. Information on a full line of water works brass goods is available from the A. Y. McDonald Mfg. Co., Dubuque, Iowa. Items such as the cap-inverted key curb stop; round-way, malleable, galvanized tee handle, and iron pipe are available.

(*Continued on page 22*)

BRIGGS & STRATTON
ENGINES

A Re-Statement of Policy

Loyalty to our customers of long standing . . . their needs come first.

Production at highest possible levels . . . limited only by availability of materials that meet our exacting specifications.

No deviation from Briggs & Stratton high standards of engineering, manufacture and inspection.

Expansion of our world-wide organization of Authorized Service Stations . . . staffed with skilled, factory-trained personnel . . . and adequately supplied with repair parts.

These policies, re-affirmed now, are continued assurance to equipment manufacturers, dealers and users that "It's powered RIGHT . . . when it's powered by Briggs & Stratton".

BRIGGS & STRATTON CORPORATION
Milwaukee 1, Wisconsin, U. S. A.

Air-Cooled Power

4 CYCLE
BRIGGS & STRATTON
GASOLINE ENGINES

Check and Mail

Use Coupon on Page 19

Anthracite as a Filtering Medium

385. The use of anthracite as a filtering medium for all purposes is explained in detail in literature available from the Palmer Filter Equipment Co., 822 E. Eighth St., Erie, Pa.

How to Install Pipe Underground

386. Folder S-117 being offered by the Greenlee Tool Co., Division of Greenlee Bros. & Co., 2032 Columbia Ave., Rockford, Ill., will show you how to lower your underground pipe installation costs. The booklet discusses the operation of the Greenlee hydraulic pipe pusher and points to the many savings effected by its use, including the saving of time, work, and inconvenience caused by tearing up floors, lawns, and pavement. It also eliminates backfill, tamping, tunneling and re-paving.

Learn Why Some Cities Chose Trolley Coaches

387. Copies of the September 1946 issue of *The Coupler*, published by the Toronto Transportation Commission, are available from Ohio Brass, Mansfield, Ohio. Facts will be given you on why, after an analysis of operations in numerous other cities, the commission decided to include modern electrics in its huge transit modernization.

These Well Pumps Have Many Automatic Features

388. For use in wells of varying depths for the production of water capacities as high as 4,000 gallons per minute are the pumps of the Johnston Pump Co., 2324 East 49 St., Los Angeles, Calif. Literature available on these pumps points out that the pump heads are manufactured in sizes to meet practically all requirements, that automatic lubricators are furnished with all electric motor-driven oil-lubricated pumps, and that a positive oiling system prevents churning of oil, thereby materially reducing heat.

Mixes and Paves As It Goes

389. You can now do a complete mixing and paving job right in place on any asphalt paving project. Hetherington & Berner, Inc., 719 Kentucky Ave., Indianapolis 7, Ind., will send you bulletin MP-46 on its Moto-Paver, which mixes and paves as it goes, spreading and laying any type of mixed-in-place bituminous material to any width, thickness, and crown condition.

Road Repair Equipment

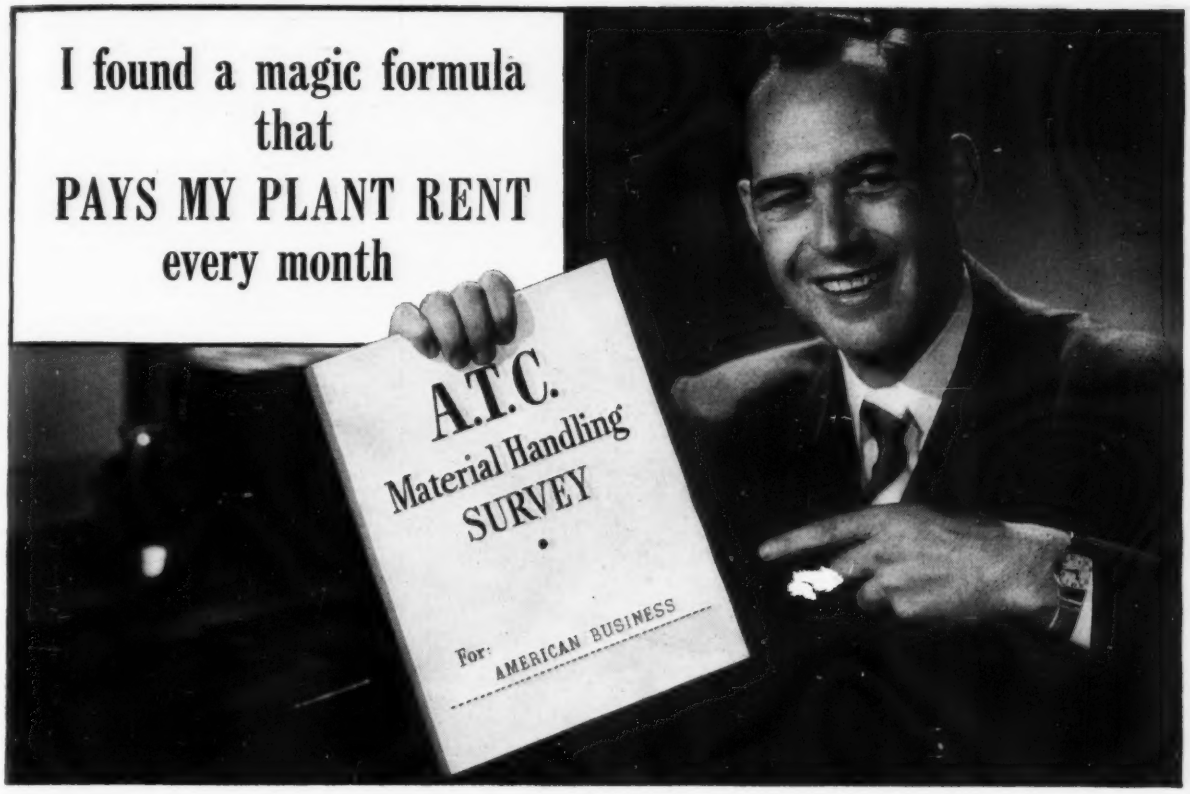
390. For road repair work, Littleford Bros., 500 E. Pearl St., Cincinnati 2, Ohio, offers you literature on its line of equipment designed to simplify operations. The 84-HD is a fast-heating kettle with patented features: the 101 Utility Spray Tank combines three units in one; and the Trail-O-Roller is a portable roller that gives as much compaction as a 5-ton tandem.

Construction and Repair of Masonry Work

391. An interesting means of constructing or repairing prestressed tanks, reservoir linings, tunnel linings, and making dam repairs and sewer repairs as well as disintegrated concrete abutment and other types of masonry is described in literature available from the Pressure Concrete Co., 1st National Bank Bldg., Florence, Ala. It also discusses the methods used for such work.

(Continued on page 24)

I found a magic formula that PAYS MY PLANT RENT every month



It showed me how to SAVE 60% every month on Material Handling!

I never paid much attention to material handling in my business. It was just so much overhead, and I paid through the nose.

Then an A.T.C. Specialist came into my plant and made a material handling survey. No cost, no bother, no strings attached.

About a week later, he handed me the folder you see pictured above. It was short and sweet—no complicated figures, no hocus pocus. The net of it was, I was paying 60% too much for my material handling . . . 60% overhead I could have been saving by using Automatic Electric Trucks instead of hand trucks and manual moving, lifting and stacking of material.

Now with these brawny giants of electric power at work for me, one man does the work of three, releasing two men for more productive work. We now lift, move and stack material ceiling high—get extra storage space—speed production, build morale with happier, safer working conditions.

That's the magic formula I found in an A.T.C. Specialist's Survey . . . a formula that saves me 60%—pays my plant rent every month, pays labor dividends in lightened, humane work. You may be able to save similarly in your business! At least let an A.T.C. Specialist survey your material handling. Mail the coupon.

Automatic
ELECTRIC TRUCKS
Lighten LIFE'S LOADS

AUTOMATIC TRANSPORTATION COMPANY
DIV. OF THE YALE & TOWNE MFG. CO.
147 W. 87th Street, Dept. A, Chicago 20, Ill.

Please mail me, without cost or obligation, complete facts about AUTOMATIC FORK TRUCKS.

( ) Have an A.T.C. Material Handling Specialist call.

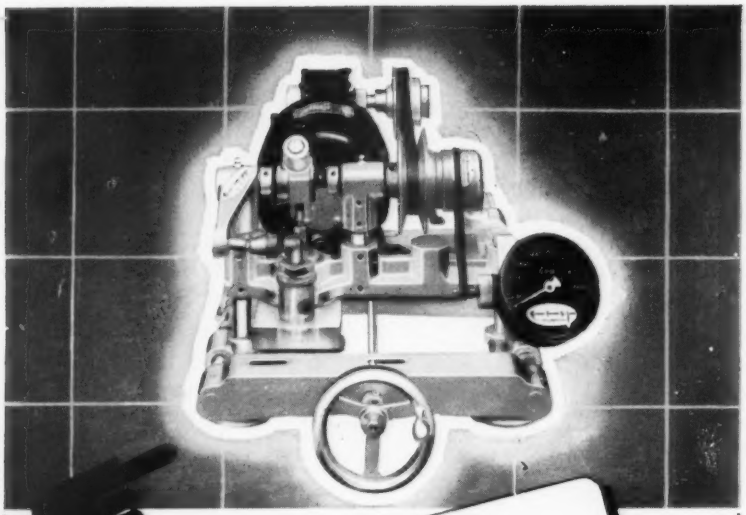
Company Name.....

Kind of Business.....

By.....*Position*.....

Street Address.....

City.....*State*.....



YOU CAN COUNT ON VAR-I-FEEDER

Accurate

CHEMICAL FEEDING

For accurate chemical feeding VAR-I-FEEDER has the combination that counts! Only Var-I-Feeder *combines* tachometer count, variable speed drive and high injection rate. This exclusive combination assures accurate chemical feeding at all times — quickly and easily without interrupting feed.

1. **Accurate chemical feeding.**
2. Easy dosage change without interrupting feed.
3. Multiple chemical feeding by means of ADD-A-FEEDER.
4. Easy adaptation to automatic operation with any available drive.

OTHER IMPORTANT VAR-I-FEEDER PLUS-FEATURES FOLLOW:

V Illuminated re-agent head — "right side up", simpler, better.

A Injects against up to 100 lbs. pressure into the stream.

R Accurately reproduces any previous measured operation.

I Visible, hi-speed pump with oversize suction check-valve.

F Small, short-stroke piston; ample area minimum lift check-valves.

E Long-wearing, low-priced, easily adjusted or replaced parts.

E Gear head, slow speed, oversized motor.

D One V-belt in entire unit.

E Light in weight; easily portable.

R Ample resources for manufacture, research and financing.

Write for Bulletin VARI on the Var-I-Feeder, and Bulletin No. 91 on the Add-A-Feeder.

VAR-I-FEEDER

Serves In . . .

Alum Feeding • Caustic Dosage • Hypochlorination • Aqua Ammoniation • Soda Ash Treatment • Swim Pool Water Treatment • Calgon for Corrosion Control • Chlorine Dioxide for Taste and Odor Control • Sterilization with HTH, Perchloron, Pittchlor or Bleach . . .

Also . . .

Any Other Chemical Solution Used In — Water Works • Sewage Plants • Tourists Camps and Cabins • Swim Pools • Soft Drink Plants and Breweries • Textile Mills • Dairies • Laundries • Boiler Feed-Water Conditioning.

We construct and install special units for any industrial liquid process.

CHEMICAL FEEDERS DIVISION

MORSE BOULGER DESTRUCTOR COMPANY

Room 1700F, 205 East 42nd Street

NEW YORK 17, N. Y.

PROVIDENCE OFFICE: 250 Auburn Street, Cranston, Rhode Island

Check and Mail

Use Coupon on Page 19

Batteries for Municipal Vehicles

392. The Hand Laboratory, Nyack, N. Y., points out that its storage batteries are suitable for use on police radio cars, sanitation trucks, snow plows, sweepers, emergency trucks, ambulances, and fire apparatus. The company will send you further details on the construction of these batteries which makes them long-wearing and especially suitable for hilly terrain.

Hydrants and Valves

393. Pipeline accessories, including valves and hydrants, are the subject of catalog No. 34 being offered to city officials by M & H Valve and Fittings Co., Anniston, Ala. These products are made according to standard specifications and are widely used by water works systems.

Insert Valves Without Interrupting Service

394. You can insert valves in your lines without shutting down or dewatering the line. The A. P. Smith Mfg. Co., East Orange, N. J., will send you information about its machines, which insert standard gate valves up to 48 inches without interrupting the flow.

Aluminum Reflectors

395. The use of aluminum will give you a reflector that is longer lasting, tougher and less affected by the usual hazards, according to the Aluminum Company of America, 1859 Gulf Bldg., Pittsburgh 19, Pa. Use of Alcoa aluminum for reflectors for fluorescent, incandescent, or radiant lights permits making any type of reflector. With the Alzak finish, the reflector may be bent and shaped without damage to the tough protective oxide coating.

Parking Meter Adjustable to Time and Coin Combination

396. City officials in charge of parking problems who have to meet changing traffic demands will be interested in the features of the Park-O-Meter. Magee-Hale Park-O-Meter Co., Commerce Exchange Bldg., Oklahoma City 2, Okla., will send you complete information on the automatic Park-O-Meter, which is quickly and easily adjustable to any desired time or coin combination.

Management Information Service

397. The International City Managers' Association, 1313 E. 60 St., Chicago 37, Ill., will send details about its Management Information Service, designed to provide cities with technical advice on management problems. For a fee that varies with the size of the city, this subscription includes replies to specific inquiries on management problems, copies of replies to inquiries from other cities, copies of monthly *Public Management*, and the *Municipal Year Book*.

Protects Deep Well Pumps

398. The Protectrol is a device which stops a deep well pump when water is not being discharged. It cannot start again until the device has been manually reset, regardless of primary control operation. Another model comes complete with alarm and alarm silencing circuits. When the fault is removed, the Protectrol is reset by pressing a button. This instantly restores the primary control, extinguishes the warning light, and automatically resets the alarm silencer mechanism. Further information may be obtained from the Automatic Control Co., 1015 University Ave., St. Paul 4, Minn.

(*Continued on page 26*)

Carthage adds the 6th. NORDBERG DIESEL

The latest addition is the 3200 horsepower unit shown in the foreground.

The modernization program of the municipal power plant at Carthage, Missouri began in 1920 with the installation of its first Nordberg Diesel, a unit of 750 horsepower. In 1923 and again in 1927, units of 1250 horsepower were added. As the load grew, more generating capacity was again needed and larger engines of 2250 horsepower were installed in 1935 and 1937. One of these replaced the original engine of 750 horsepower. The latest engine of 3200 horsepower installed in 1946 brings the total plant capacity to 10,200 horsepower in Nordberg Diesels making this one of the larger Diesel engined municipal power plants in the country. In addition to being outstanding for its size, the Carthage plant is also noteworthy for its performance. This plant has long been recognized as one of the nation's low cost generating stations. At Carthage as at so many of the larger Diesel power plants, repeat orders have been placed for Nordberg Diesels when additional capacity is required.

If you are contemplating adding more capacity or desirous of obtaining power at lower cost, investigate the merits of dependable, economical Nordberg Diesel power.

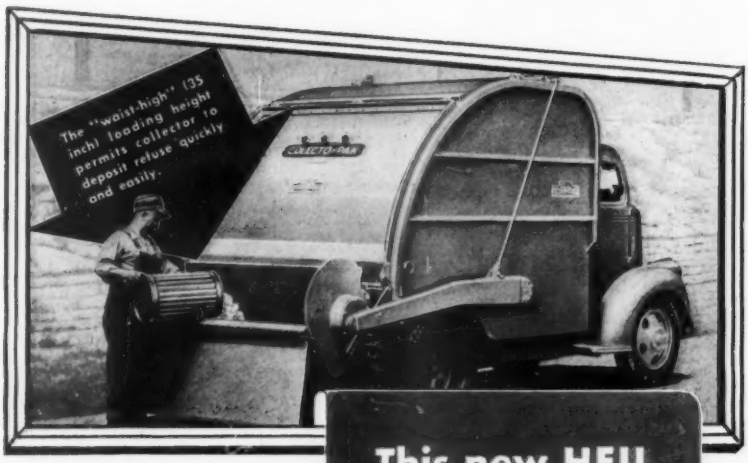
NORDBERG MFG. CO • MILWAUKEE 7, WISCONSIN

NORDBERG MACHINERY

NORDBERG

DIESEL ENGINES

NORDBERG MACHINERY



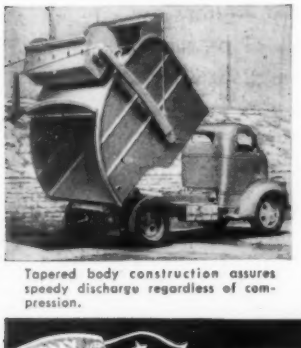
Bucket unloads in less than a minute under fingertip control.

This new HEIL
COLECTO-PAK
Municipal Refuse
Disposal Body

gives you

★ Low loading height
★ Double capacity
★ Complete enclosure
★ Easy maintenance

Automatic, hydraulic-operated packer plate packs 20 yds. in a 10-yd. body.



Tapered body construction assures speedy discharge regardless of compression.

The all-enclosed, water-tight Heil Colecto-Pak is the answer to your search for a modern method of speeding-up, simplifying, and improving garbage collection and disposal.

This unit has a ¾-yard loading bucket at a 35-inch height making it extra easy to load. This "power-lifted" bucket deposits load and returns to starting position in less than a minute. At the same time the hydraulic-operated packer plate is compressing the material down toward the discharge end. It is possible to compress 20 yards of wrapped garbage into this 10-yard body.

With this unit your city has a clean, sanitary means of collecting garbage with none of the unsightly and unsanitary features imposed by "open body" collectors. Your city can feel proud of its advanced thinking in purchasing a Heil Colecto-Pak.

BH-114

Write for bulletins.

ARMY ★ NAVY

THE HEIL CO.

GENERAL OFFICES • MILWAUKEE 1, WISCONSIN

Check and Mail

Use Coupon on Page 19

Concrete Cylinder Pipe

399. West Coast water works officials will be interested in two bulletins available from the American Pipe & Construction Co., P. O. Box 3428, Terminal Annex, Los Angeles 54, Calif. These bulletins contain interesting data and facts describing the use of reinforced concrete cylinder pipe in present main water supply lines in the Los Angeles and San Diego areas. Available in diameters of 16 inches and up, this pipe has many advantages, including welded steel cylinders, special joint rings welded to the cylinder, concrete lining placed in the cylinder by centrifugal process, special reinforcement wrapped on cylinder, and concrete protective coating applied outside.

All Season, All-Purpose Trucks

400. The Four Wheel Drive Auto Co., Clintonville, Wis., will send full information on trucks suitable for all-season, all-purpose use. They will be glad to tell you how other municipalities are using these four-wheel-drive trucks for new street construction and maintenance, land clearing, refuse disposal work, heavy hauling, snow clearing, and many other heavy-duty jobs.

Centrifugal Pipes Equipped With Standard Joints

401. Water works and sewage treatment officials will be interested in a catalog from the American Cast Iron Pipe Co., Birmingham 2, Ala., on Mono-Cast centrifugal pipe. This corrosion-resistant pipe is available with five standard joints; Doublex Simplex joint, bell and spigot joint; and Molox ball-and-socket joints. This pipe can be furnished with standard or Enameline cement linings.

Booklet on Sanitation Practices

402. Water works men can obtain from the Mathieson Alkali Works, Inc., 60 East 42 St., New York 17, N. Y., a copy of "Hypo-Chlorination of Water." This 80-page illustrated booklet discusses all standard sanitation practices and shows how Sanitation HTH is used in emergencies for treating filters, controlling algae, and sterilizing new mains.

What Simplicity Means in This Water Meter

403. Simplicity in water meters means few parts to wear, inexpensive repairs and adjustments, accessibility of all parts, quick reassembly of meter, and less time out for repairs, says the Buffalo Meter Co., 2902 Main St., Buffalo 14, N. Y. Write for a catalog showing how this simplicity is attained.

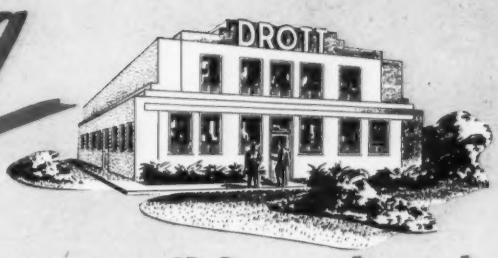
Make Cuts in Water Lines Under Pressure

404. Municipal water works officials will be interested in the power-operated drilling machine about which the Mueller Co., Decatur, Ill., will send you information showing how it can be used with tapping sleeves and valves to make cuts in a line under pressure. A special air motor drives the cutter at the correct speed; the feed is automatic; and an indicator shows the position of the cutter at all times. There is also available a hand-operated model.

For Jointing Cast Iron Mains

405. For quick jointing of cast iron water mains you will be interested in data from The Leadite Co., Girard Trust Co. Bldg., Philadelphia 2, Pa. Leadite is melted and poured, does not require that large bell holes be dug, and is shipped in a powder form.

Landscaping



The New Home of The Drott Bullclam Shovel

...with The Drott Bullclam Shovel Method of Sanitary Fill

Refuse for our fill came from the Village of Shorewood, Town of Milwaukee and Town of Granville. Drott Bullclam Shovel is shown compacting, with finished fill at left, and trench, from which covering material was obtained, at right.

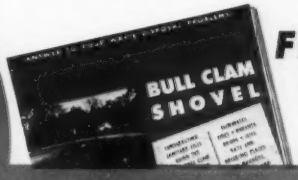
What's more natural than to raise and landscape the land in front of our new, modern factory with a Sanitary Fill built with our own Drott Bullclam Shovel?

Yes, here we have an attractive finished fill for you to see when you come to visit us . . . to show what you, too, can accomplish in your own community by using this modern means of refuse disposal.

Location of our site, in the heart of a residential area, is proof you can build a Sanitary Fill the Drott Bullclam Shovel way on any convenient location — thus keep hauling cost to a minimum.

Investigate this neat, modern, economical method of refuse disposal . . . NOW!

Operated by DROTT POSITIVE CLOSED HYDRAULIC SYSTEM • SMOOTH • QUICK • DEPENDABLE. Keeps dirt and air out . . . keeps oil in! Used successfully on Drott equipment for many years.



FREE

Get the Complete Story! Send for This Book—"Answer To Your Waste Disposal Problems . . . With the Drott Bullclam Shovel."

DROTT
UNIVERSAL EQUIPMENT

DROTT MANUFACTURING CORP.
(FORMERLY HI-WAY SERVICE CORP.)
4344 N. GREEN BAY AVE. MILWAUKEE 12, WISCONSIN

C. I. P. CENTURY CLUB GAINS

Wilmington, Del. Newark, N.J. Boston, Mass.

This year, according to our records, the above named cities, having cast iron mains now in their 100th year of service, are eligible to join the growing group of municipalities already members of the Cast Iron Pipe Century Club. There are no dues, nor any obligation other than to inform us if the qualifying main is taken out of service, or, sold for re-use in another city. Incidentally, the membership outlook for C. I. P. C. C. is promising since many cities have some or all of their original cast iron mains in service, a number of them within hailing distance of the century mark.

Large cities do not keep inefficient mains in service, however old, for sentiment's sake. Cast iron water mains, laid a century or more ago, still function in America's largest cities because they offer additional years, generations, or even centuries, of efficient life. This is what we mean by *efficient* life:

> *"Cast iron pipe not only offers a century or more of efficient life as a structure—it offers a century or more of efficient life as a carrier. In the limited areas with tuberculating waters,*

CAST IRON PIPE

4 NEW CITIES IN '47...

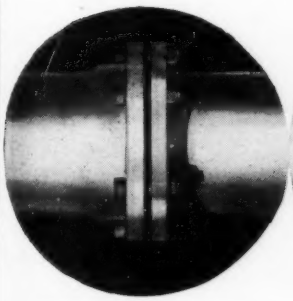
Providence, R. I.

cement-lined cast iron pipe is tuberculation-proof and insures high carrying capacity for the life of the pipe. In the greatly predominating areas without tuberculating waters, the carrying capacity of unlined cast iron pipe remains practically unimpaired for the life of the pipe."

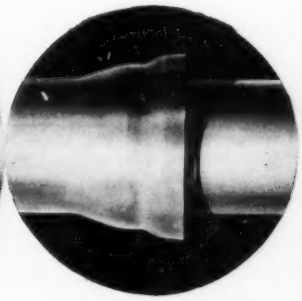
No other pressure pipe material, either on past performance or engineering estimates of performance, comes anywhere near to approaching the combined long life and sustained carrying capacity of cast iron pipe.

Joints for Cast Iron Pipe

A variety of joints are available of which the two most widely used are illustrated below. Special-purpose joints, such as the Ball-and-Socket or Flexible Joint for underwater use, and the Flanged Joint for above-ground use, are also available.



Mechanical Joint — bottle-tight and flexible, now with interchangeable parts.



Bell-and-Spigot Joint — still the standard joint for water and sewerage service.

PUBLIC WATER SUPPLY —the Forgotten Industry

The public takes piped running water for granted—until it's turned off. A good public water supply is not news—except on the rare occasions when something goes wrong. To help create public awareness of the service rendered by America's water supply systems, the Cast Iron Pipe Research Association is presenting little known facts about public water supply to the *six million* influential readers of "Time" and "Nation's Business." For instance, the following excerpts and illustration from a current advertisement.

"rowboats on fifth avenue"

"Imagine enough water to cover Manhattan Island's 22 square miles with a knee-deep flood. That's what the thirty-three million tons of water delivered daily by America's public water supply systems would do.

"Based on weight of product, processed and delivered, public water supply is America's largest industry. In *three days,* this indispensable industry delivers more tons of water than the tonnage produced by the steel industry in a *year!*

"A good water supply should not be unappreciated or taken for granted. It is the result of farsighted planning and faithful, efficient operation 24 hours a day, every day in the year."

★ ★ ★

Over 95% of the mains, through which this enormous amount of water is distributed, are of cast iron pipe. Typical examples: New York, 97%; Chicago, 99%; Philadelphia, 98%.

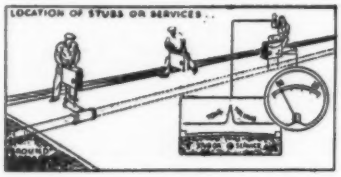
Cast Iron Pipe Research Association, T. F. Wolfe, Research Engineer, Peoples Gas Bldg., Chicago 3.

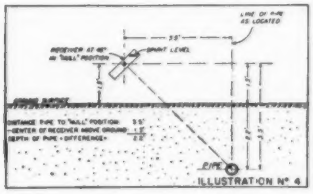
SERVES FOR CENTURIES

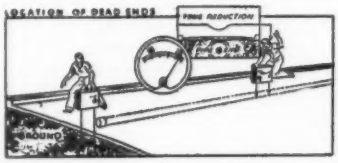
Buried Pipe and Cable Finder

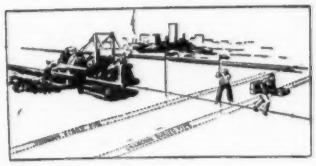
M-SCOPE

Water and Oil Leak Detector









The M-Scope is solving—successfully—the varied problems involved in the development, operation and maintenance of buried pipe and cable systems and is in daily use by representative organizations in such important groups as:

- MUNICIPALITIES
- GOVERNMENT PROJECTS
- SEWERAGE AND WATER PLANTS
- PUBLIC UTILITIES
- CONSULTING ENGINEERS
- AIRPORTS
- INDUSTRIAL PLANTS
- OIL AND PIPELINE COMPANIES

Free 16-Page Booklet Upon Request

FISHER RESEARCH LABORATORY, Inc. Palo Alto, California

Eastern Distributors of
FISHER M-SCOPE and LEAK DETECTORS

Joseph G. Pollard Co., Inc.

PIPE LINE EQUIPMENT

141 ASHLAND PLACE, BROOKLYN 1, NEW YORK

LEADITE

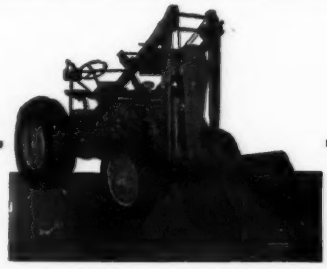
FOR JOINTING CAST-IRON WATER MAINS

Melted and Poured *No Large Bell-holes to Dig*
Saves at Least 75%

Leadite is shipped in powder form, packed in sacks of 100 lbs. net each. Leadite tested and used for over 50 years • Leadite joints improve with age.

Be sure it is Leadite and accept no imitations

THE LEADITE COMPANY
Girard Trust Co. Bldg., Philadelphia 2, Pa.



5/8 Cu. Yd. 8' Lift

FRONT END LOADERS
for Industrial Tractors

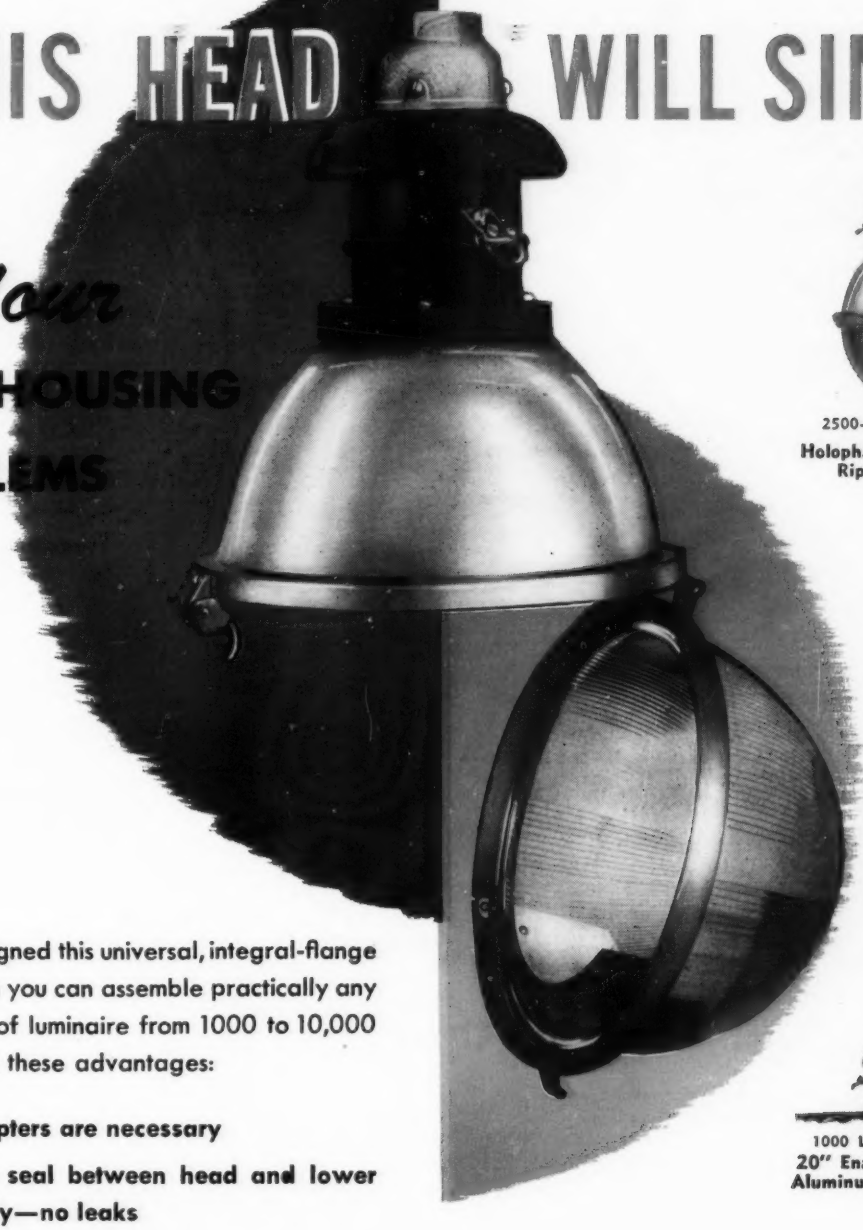
Elkhart White Mfg. Co. Indiana

BUY all the Bonds you can . . . KEEP all the Bonds you buy
PROTECT YOUR FUTURE — Buy your EXTRA Bonds now!

THIS HEAD WILL SIMPLIFY

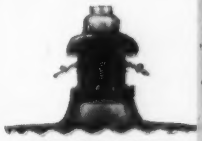
Your

WAREHOUSING PROBLEMS

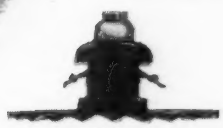


2500-10,000 LUMEN
Holophane Refractor or Rippled Globe.

2500-6000 LUMEN
18" Alzak Aluminum Spherical Bowl Reflecto



1000-6000 LUMEN
20" Enameled or Alzak Aluminum Bowl Reflecto



1000 LUMEN OR LESS
20" Enameled or Alzak Aluminum Flat Reflector.

Joslyn has designed this universal, integral-flange unit from which you can assemble practically any selected type of luminaire from 1000 to 10,000 lumens. Check these advantages:

No Adapters are necessary

Positive seal between head and lower assembly—no leaks

Easy Socket Adjustment for maximum efficiency

Easy conversion to other types of luminaires—on-the-pole

Joslyn street lighting luminaires and accessories offer you the finest quality in equipment PLUS maximum economy in stocking parts and in maintaining service. Ask our nearest representative to explain the many advantages of Joslyn street lighting equipment.

Branch offices in principal cities

•

THE JOSLYN CO.
THE SOUTH EAST JOSLYN CO.
SOUTHERN JOSLYN CO.
JOSLYN SOUTHWEST CO.
JOSLYN COMPANY OF CALIFORNIA
JOBBERS SUPPLY CO.

JOSLYN MFG. AND SUPPLY CO.

Complete Pole Line Equipment

20 NORTH WACKER DRIVE, CHICAGO 6, ILL.

4 Modern Tools to Cut

END DISCHARGE SAVES PATCHING TIME with KWIK-MIX BITUMINOUS MIXER

Kwik-Mix Bituminous Mixers materially reduce patching time, because they combine two important time-saving features: (1) End Discharge, (2) Non-Tilting Discharge. End discharge makes possible direct pouring of mix into break. No wheelbarrow is needed. Because of end discharge, mixer never is pulled through new patch. Non-tilting feature speeds discharge every batch. Full drum is emptied in seven seconds through big discharge door. Door easily opened with one hand. Back-breaking tilting is eliminated. Operator fatigue near end of shift and resulting production loss is eliminated.

KWIK-MIX COMPANY PORT WASHINGTON, WISCONSIN

IDEAL FOR CITY WORK . . . *Parsons* 221 TRENCHLINER*

The new Parsons 221 Trenchliner, public service model in the Parsons line of trenchers, sidesteps surface obstructions as close as 10" to either side of the projected trench. Boom shifts from side to side across entire width of boom carriage. Easy to shift, because it rides smoothly on big diameter rollers. Arc type spoil conveyor reaches up 6' 9", easily dumps into 1½-ton trucks. Telescoping ladder type boom can dig over and under obstructing pipes in trench, virtually eliminating hand work.

*T/M REG. U. S. PAT. OFF.

PARSONS COMPANY NEWTON, IOWA

YOUR Maintenance Costs

Preventive maintenance with KOEHRING MUD-JACK pays BIG DIVIDENDS

T/M REG. U. S. PAT. OFF.

Koehring Mud-Jack reduces maintenance costs on concrete street slabs, sidewalks, curbs and gutters. Sunken slabs, sidewalks, curbs and gutters can economically be raised to grade before weakened subgrade conditions can cause damage. Through small holes drilled into depressed slab Mud-Jack pumps inexpensive cement-sand slurry to replace firm foundation beneath concrete. Cost of Mud-Jack maintenance is but a fraction of replacement cost. Koehring No. 10 Mud-Jacks and Koehring No. 50 Mud-Jacks are used by cities, towns and counties throughout the U. S.

HEAVY-DUTY *Handyman*

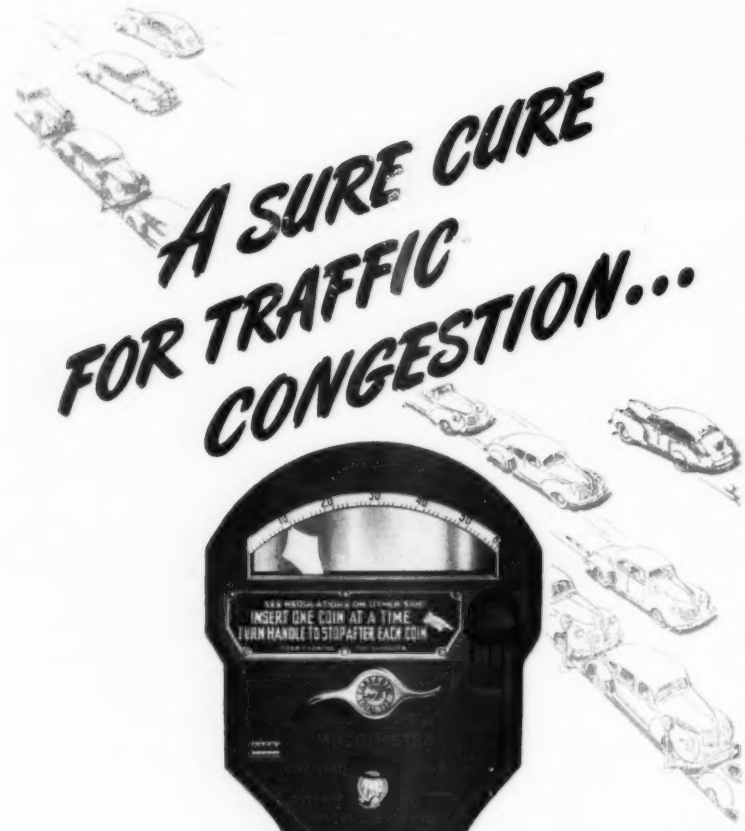
In the Koehring 205, the new Heavy-Duty Half Yard, exceptionally heavy construction for a machine of its size is combined with all the half yard features that make this model ideal for city yard and maintenance work. Independent traction and fast swing step up output when 205 works as crane or clamshell, handling aggregates, pipe, lumber. Chain-driven double cable crowd gets extra power to dipper when 205 is used as shovel. Completely and easily convertible. Available on crawlers or on truck chassis as a one-man operated Cruiser Crane.

KOEHRING PRODUCT

KOEHRING COMPANY MILWAUKEE 10, WISCONSIN

782

XUM



A SURE CURE FOR TRAFFIC CONGESTION...

MI-CO

PARKING METERS

The installation of MI-CO Parking Meters is a big step in the right direction because they not only help control traffic, but they do it with maintenance expense so low it's almost unbelievable. This has been proved in scores of instances, and is the natural result of improved design and unusually sturdy construction. Take a look at the inside of a MI-CO Meter and you'll find mighty few working parts. By reducing the number of moving elements you lessen considerably the nonproductive time of a meter and consequently increase its earnings. You'll find that MI-CO Parking Meters have a habit of paying out quickly because they are seldom out of order. Case histories telling of the low maintenance expense of MI-CO Meters, and literature containing constructional details will be sent on request. If you are interested in metered parking, be sure to see what MI-CO has to offer.

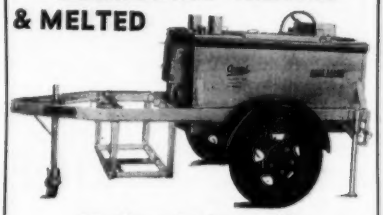
MI-CO METERS, 231 Court St., COVINGTON, KY.

Division of The Michaels Art Bronze Co., Inc., Covington, Ky.

RUBBERIZED ASPHALT

(FEDERAL SPECIFICATIONS SS-F-336)

CORRECTLY HEATED & MELTED



Under Automatic Thermostatic Control!

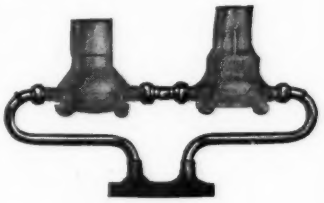
New Double-Vat indirectly heated *thermostatically controlled* Kettle meets all State and Federal Specifications for melting "rubber sealers." "No more inconvenience or loss of time than if we were using ordinary asphalt!" writes one enthusiastic user. "Poured 11,000 feet in one day," reports another who used one kettle to complete a difficult 84,000-foot contract with time to spare. Endorsed by leading compounders. Send for FREE eight page profusely illustrated Bulletin 310AC containing "on the spot" photographs, helpful suggestions, complete specifications, etc. Write TODAY.

AEROIL PRODUCTS CO.

5705 Park Avenue
West New York, New Jersey

TANDEM *RESETTERS*

To check one meter directly against another in service, either to compare performance or to satisfy a doubting customer, the Tandem Resetter provides the simplest and easiest means of making the connection.



To use, it is only necessary to remove the meter from its regular position, connect in the Resetter bar, and then install the two meters in series.

Write for catalog.

The **FORD**

METER BOX COMPANY, INC.

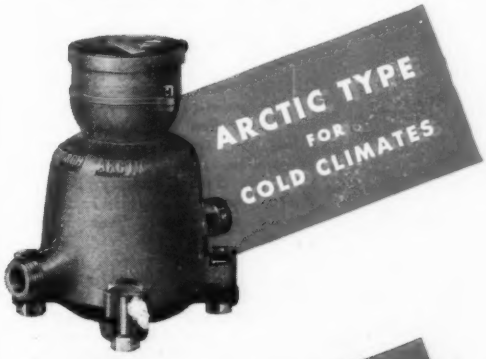
Wabash, Indiana

how PRECISION begets PRECISION TO your ADVANTAGE

The measuring chamber halves of Pittsburgh Disc Meters are bored, turned, grooved, chamfered and faced in successive automatic operations on this especially designed machine. Rigid tolerances are held by gauge inspection with readings taken in ten-thousandths of an inch. Other equally accurate automatics finish turn the disc surfaces.

Precision in meter measurement largely depends upon precision in manufacture. And the precision with which today's Pittsburgh Arctic and Tropic type meters are made on new, specially built automatic equipment means long term savings to the disc meter buyer. Exacting dimensional control over all component parts assures a perfectly fitted, perfectly balanced meter—a meter that will maintain its initial high accuracy for many years without breakdowns, sticking or premature wear—a meter that costs less because it measures more.

Now's the time to learn about the new, high performance standards in Pittsburgh Disc Meters that our *exclusive* precision manufacturing methods make possible. Ask your nearest sales office for a demonstration.



PITTSBURGH EQUITABLE METER DIVISION

Rockwell Manufacturing Company

Pittsburgh 8, Pa.

Atlanta	Houston	New York
Boston	Kansas City	Pittsburgh
Chicago	Los Angeles	San Francisco
Seattle	Tulsa	

PITTSBURGH DISC METERS

AUTOMATIC VOTING MACHINES
ELIMINATE
SPOILED AND DEFECTIVE BALLOTS

At the recent election, many paper ballots were invalidated because of:

1—Voting for more than the proper number of candidates.

2—Distinguishing marks which can be construed as identifying the ballot.

3—Erasure to correct a mistake.

4—Use of a pen instead of a pencil.

5—Failure to keep cross mark (X) fully within the voting square.

6—Scratching the names of candidates for whom the voter does NOT wish to vote. (In some States, however, this is legal)

3,500 Cities and Towns from Coast-to-Coast have found that these errors may be completely eliminated through the installation of Automatic Voting Machines.

If your community is interested in a more efficient and less expensive voting system write—

AUTOMATIC VOTING MACHINE CORPORATION
JAMESTOWN 55, NEW YORK

Builders of voting machines since 1898

YOU ORDER EARLY
WE DELIVER EARLY
Drinking Fountain planting time is not too far away. When are you going to need Drinking Fountains, Hydrants, Hose Boxes?
It's to your benefit to anticipate your needs and let us work with you—let us arrange our production facilities to meet your delivery requirements.
Write us today.
"It Pays to Buy MURDOCK"
The Murdock Mfg. & Sup. Co.
426 Plum St. Cincinnati 2, Ohio
MURDOCK
OUTDOOR DRINKING FOUNTAIN
ANTI-FREEZING COMPRESSION HYDRANT
LARGE ANTI-FREEZING HYDRANTS 1½" TO 2" INCLUSIVE
SELF-CLOSING ANTI-FREEZING HYDRANT
"LOCK-LID" STREET WASHERS 3/4" and 1" SIZES

TANKS
Cole elevated tanks are helping to provide uniform water pressure, fire protection and adequate water reserve in Charlotte, Mobile, Daytona Beach, Spartanburg, St. Petersburg, Gastonia and scores of other American cities.
We design, fabricate and erect elevated tanks of 5,000 to 2,000,000 gal. capacity, with hemispherical, ellipsoidal or conical bottoms. Correct in design — economical to maintain.
State capacity, height to bottom and location.
R.D. COLE MFG. CO.
Newnan Ga.
ESTABLISHED 1854
TANKS
TOWERS
CYLINDERS
VESSELS

THE MODERN WAY

Model 10

HIGHWAY CROSSING SIGNALS

HAVE THEIR UPS ...AND THEIR DOWNS

IN DESIGN AND EFFICIENCY
Always Up with the times

FOR DEPENDABLE PROTECTION
Always Down in First and in Operating Cost

Model 10 HIGHWAY CROSSING SIGNALS
Will fit into your modernization picture, too

You can't install *better* protection at railroad-highway crossings than is provided by Model 10 Signals . . . you can't buy better railroad-highway crossing protection for so little. Model 10's offer the utmost in dependable, *automatic* grade crossing vigilance—24 hours a day. Look at the record: approximately 3000 WRRS Model 10's now on guard duty for 77 railroads . . . and during 10 years have established a phenomenal life-saving record.

U. S. Pat. Numbers
2,137,196
2,362,710
2,372,579
Patented in Canada
6-27-39
Other Patents Pending

Write for Bulletin G136-AC-1

MODEL 10 HIGHWAY CROSSING SIGNALS ARE THE PRODUCT OF

WESTERN RAILROAD SUPPLY CO.

Designers and Manufacturers of Safety Devices for Railroads

2406-2436 SOUTH ASHLAND AVENUE CHICAGO 8, ILLINOIS

"99-H"

THE POWER GRADER THAT HAS EVERYTHING!

No Motor Grader without All-Wheel Drive and All-Wheel Steer can hope to equal the all-around operating efficiency of an Austin-Western "99" Power Grader. This was true of the "99" and "99-M." It is even more true of the "99-H" with its exclusive All-Wheel Drive and All-Wheel Steer, PLUS High-Lift Blade, Extreme Blade Reach and Completely Reversible Blade.

Your nearby Austin-Western distributor will be glad to tell you the whole story of *"The Power Grader That Has Everything."*

AUSTIN-WESTERN COMPANY, AURORA, ILLINOIS, U.S.A.

ALL-WHEEL DRIVE

provides tremendous earth-moving ability under all ground conditions. The entire weight of the machine is on driving wheels.

ALL-WHEEL STEER

speeds up and simplifies every job; makes it easy for the "99-H" to do things that are impossible for ordinary motor graders.

PLUS

HIGH LIFT BLADE

All-Wheel Drive and All-Wheel Steer make it possible for the "99-H" to do a superlative job of sloping banks, from the flattest to the steepest.

COMPLETELY REVERSIBLE BLADE

All-Wheel Steer greatly simplifies grading in reverse, by providing perfect steering control of both ends of the machine.

EXTREME BLADE REACH

Rear Steer makes it possible to reach 10 feet, 3 inches beyond the rear tire—a figure not even approached by any other grader.

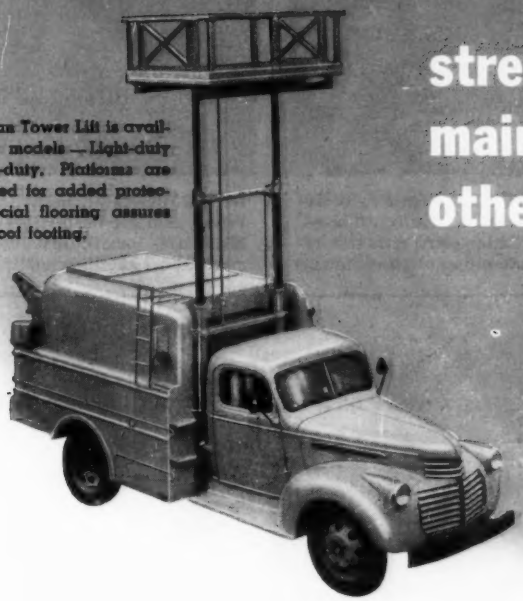
BUILDERS OF ROAD MACHINERY

Austin-Western

SINCE 1859

NOW..A COMPLETE LINE OF AERIAL EQUIPMENT

for street lighting, maintenance, other overhead work



The American Tower Lift is available in two models—Light-duty and Heavy-duty. Platforms are fully insulated for added protection . . . special flooring assures safe, slip-proof footing.

The American Seagrave is a heavy-duty aerial platform ladder designed for work at heights up to 22 feet to the platform. It's especially useful where it is desirable for more than one man to work on the platform.

The Revolving Aerial Ladder has 40 spotting positions in a complete revolving radius of 360°. It provides uniform balance regardless of angle...can be mounted on most any size truck body.

For 30-odd years The American Coach and Body Company has been the largest manufacturer of utility equipment in the automotive field. Now, with the American Tower Lift—newest addition to the ACB family—American offers a complete line of aerial equipment for all overhead maintenance and installation work.

The American Tower Lift, Revolving Aerial Ladder, and Seagrave Platform Ladder are ideal for heavy line work, street lighting, signal maintenance, tree trimming, inspection work, and other overhead jobs. Our organization will be glad to assist you with your requirements. Write today for further information based on your individual requirements, and for bulletins describing this aerial equipment.

ACB and

THE American COACH and BODY COMPANY

9503 WOODLAND AVE., CLEVELAND 4, OHIO

SALES and ASSEMBLY THE AMERICAN COACH AND BODY CO. OF CALIF., 432 FIFTH ST., OAKLAND 7, CALIF
BAKER EQUIPMENT ENGINEERING CO., SUMMIT & NORFOLK STS., RICHMOND 11, VA.

OFFICES 350 MADISON AVE. NEW YORK 17, N. Y. INSURANCE EXCHANGE BLDG., DES MOINES 9, IOWA

UNDER CITY STREETS, Transite saves by permitting narrower trenches, reducing disturbance to pavement. Fast assembly minimizes traffic tie-ups.

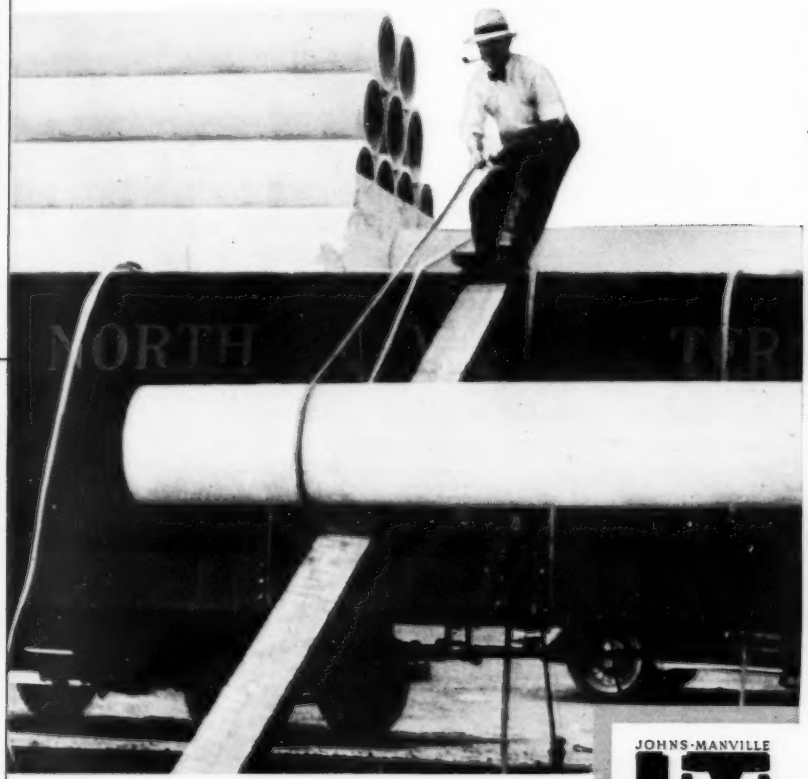
IN AGGRESSIVE SOILS, Transite guards against destructive corrosion. Thousands of installations prove its stability under a wide range of conditions.

IN THE TRENCH, man-hours are cut. Fewer men are needed for handling. Most sizes can be installed without mechanical handling equipment.

IN SUPPLY LINES, Transite's immunity to tuberculation means lower pumping costs. Its high flow capacity (C=140) is tuberculation-proof.

AS DISTRIBUTION MAINS, Transite Pipe cannot cause "red water." Its high corrosion resistance means low maintenance over the years.

Wherever it's used . . .



AS YOU CAN SEE—Transite Pipe is unusually light in weight . . . easily handled and unloaded. Installation takes less time . . . and fewer men.

JOHNS-MANVILLE
JM
PRODUCTS

ON CURVES and in hilly terrain, Transite Pipe's flexible Simplex Coupling permits up to 5° deflection at each joint without use of fittings.

UNDER HEAVY TRAFFIC the Simplex Coupling provides a flexible joint that effectively withstands vibration—absorbs the shocks of heavy vehicles.

AT THE JOINTS, Simplex Couplings mean quick, easy assembly. They safeguard against underground leakage and undermining of supporting soil.

TRANSITE PIPE HOLDS DOWN WATER LINE COSTS

WITH an eye to *future economy* as well as *present-day efficiency*—thousands of forward-looking communities are using TRANSITE PRESSURE PIPE—in both water transmission and distribution lines.

Made of asbestos and cement, this tough durable pipe saves installation, operating and maintenance costs.

Light in weight, it is easily handled. The Simplex Coupling permits quick assembly . . . forms tight yet flexible joints. Highly corrosion-resistant, this modern pipe withstands aggressive soils. Because Transite's high carrying capacity (C=140) can never be reduced by tuberculation, pressures are higher, pumping costs lower . . . an added margin is provided for future water needs.

For details, write for Brochure TR-11A. Address Johns-Manville, Box 290, New York 16, N. Y.

Johns-Manville TRANSITE PIPE

DELAYED ALARMS

CAUSE FIRE DISASTERS

WHEN FIRE OCCURS——PULL A FIRE ALARM BOX

IMMEDIATELY!

"It is generally recognized that there is no other thoroughly satisfactory means of sending and receiving fire alarms than an approved fire alarm telegraph system. Telephones should not be relied upon to replace needed boxes nor to supplement any inadequacy in number or location of boxes."

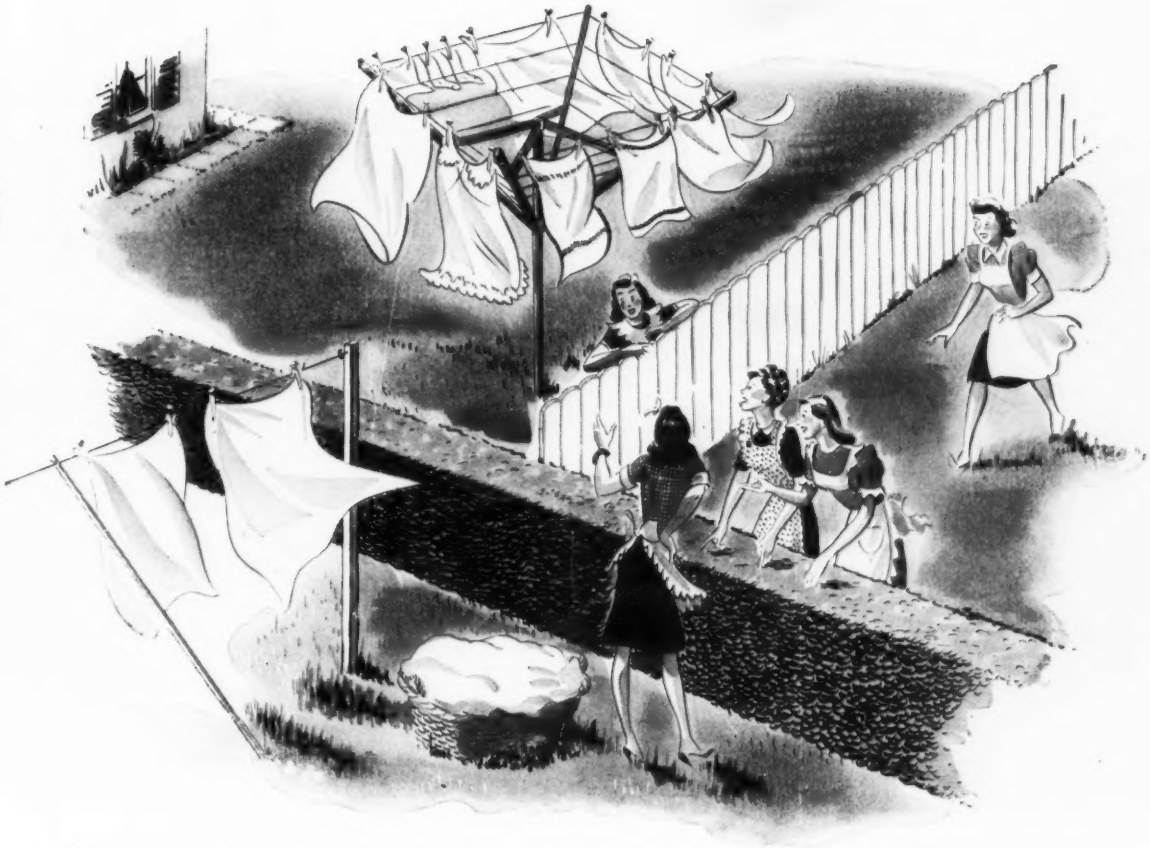
—National Fire Protection Association

DETAILED INFORMATION ON REQUEST

THE GAMEWELL COMPANY

NEWTON UPPER FALLS [illegible] MASSACHUSETTS

THE WHOLE TOWN'S TALKING!

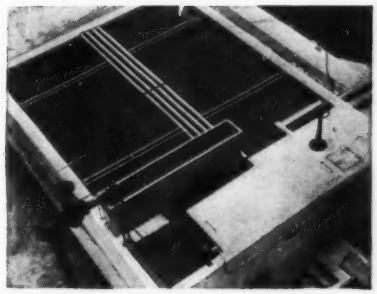


Every housewife in town is bursting with the exciting news of snow-white washes, with less effort, less soap. The reason? Their city management has installed modern, efficient Permutit* Water Conditioning equipment. It's the biggest thing that has happened in years.

From now on, municipal water will be clear...soft...iron-free! And good water does more than end household drudgery; it benefits everyone in town—shops, restaurants, and industry!

If your community has a hard-water problem—and the chances are it has—why not let the engineers of America's most experienced water-conditioning company solve it for you. Write today to The Permutit Company, Dept. A-1, 330 West 42nd St., New York 18, N. Y., or Permutit Company of Canada, Ltd., Montreal.

*Trademark Reg. U. S. Pat. Off.



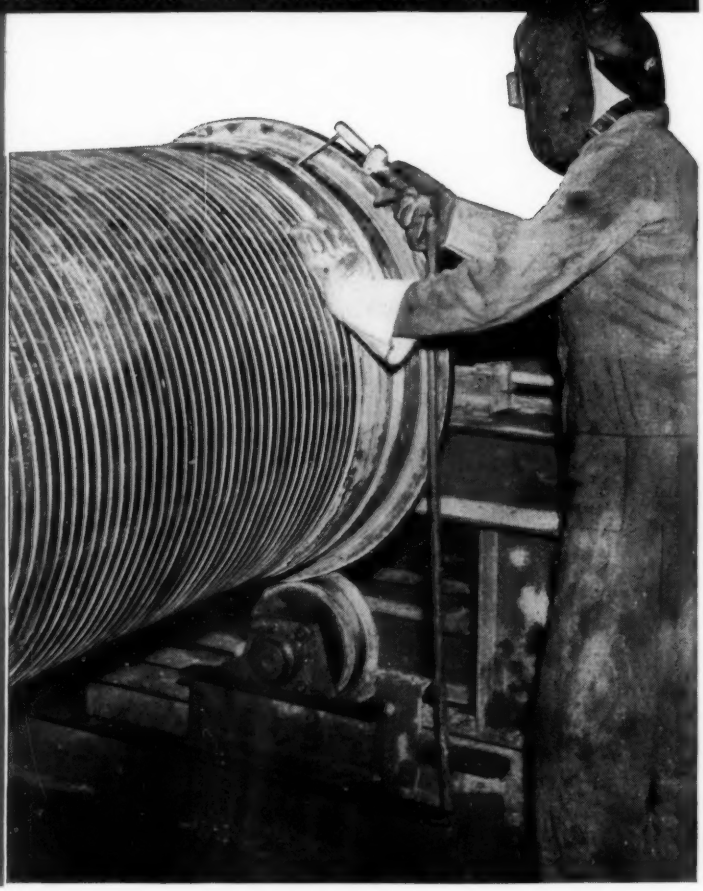
PERMUTIT SPAULDING PRECIPITATOR... removes water hardness, dirt, and color by the sludge blanket process. This modern equipment cuts detention time, saves chemicals, takes only half the space of former methods. This is only one of many Permutit methods of treating municipal water supplies.

PERMUTIT

WATER CONDITIONING HEADQUARTERS

ADVANTAGES OF PRESTRESSED CONCRETE CYLINDER PIPE • NO. 1

Higher Pressure Ranges



• PRESTRESSING, already well recognized as the normal trend of development in the design of reinforced concrete structures, is a "natural" for pressure pipes because of their tubular shape.

Lock Joint Pipe Company has applied the principles of prestressing steel in tension and concrete in compression in the design and manufacture of Lock Joint Prestressed Concrete Cylinder Pipe.

Retaining all the inherent advantages of the fundamental principles of Lock Joint pipe design, the use of high tensile steel makes possible still higher pressures in a greater range of sizes in keeping with Lock Joint economy of first cost and maintenance.

When you specify Prestressed Concrete Cylinder Pipe, you can depend upon a pipe of maximum elastic qualities as well as a pipe with the inherent benefits of water-tightness, durability and permanent high carrying capacity of steel cylinder design.

A Hazen-Williams Hydraulic Slide Rule will gladly be sent upon request with our compliments.

LOCK JOINT
Reinforced Concrete
PRESSURE PIPE

LOCK JOINT PIPE COMPANY

Established 1905

P. O. BOX 269, EAST ORANGE, NEW JERSEY

Denver, Colo. · Chicago, Ill. · Kenilworth, N. J. · Kansas City, Mo. · Rock Island, Ill.
Joplin, Mo. · Valley Park, Mo. · Cleveland, Ohio · Hartford, Conn. · Navarre, Ohio

SCOPE OF SERVICES — *Lock Joint Pipe Company specializes in the manufacture and installation of Reinforced Concrete Pressure Pipe for Water Supply and Distribution Mains of large diameter as well as Concrete Pipe of all types for Sanitary Sewers, Storm Drains, Culverts and Subaqueous lines.*

SOLVES TODAY'S BIGGEST PROBLEM

IN UNDERGROUND *pipe insulation*

AVAILABLE NOW!
Your order can be filled now . . . shipped at once from stock.
LOW IN COST!
Easy assembly . . . requires a minimum of field engineering.
EFFICIENT!
Assures maximum insulation and protection . . . minimizes heat loss.
RIC-WIL
TILE CONDUIT SYSTEMS

Every requirement of efficient underground pipe insulation and protection is fulfilled by Ric-wiL tile conduit systems. Strength, water-proofing, alignment, thermal efficiency, speed and economy of installation, are standard elements of Ric-wiL design, materials and engineering—provided by exclusive features which assure maximum protection to pipe distribution lines.

- Insulation may be as specified for steam, hot water, oil, or process-liquid pipe distribution systems.
- Non-settling base drain provides drainage in addition to supporting conduit and pipes.
- Correctly-engineered roller-type pipe supports carry the weight of the piping on the base drain.
- Shipped full-round, the tile conduit is scored for easy splitting and resealing after pipe and insulation are installed.
- Super Tile and Cast Iron conduit, interchangeable with standard construction where overhead loads are above normal, are additional, exclusive Ric-wiL features.

Write for descriptive Catalog No. 44.

RIC-WIL INSULATED PIPE CONDUIT SYSTEMS
THE RIC-WIL COMPANY · CLEVELAND, OHIO
AGENTS IN PRINCIPAL CITIES

SIMPLEX
PITOT EQUIPMENT

For LOW COST, ACCURATE WATER SURVEYS

Water Waste Surveys • Pump Discharge Checks • Plant Test Work

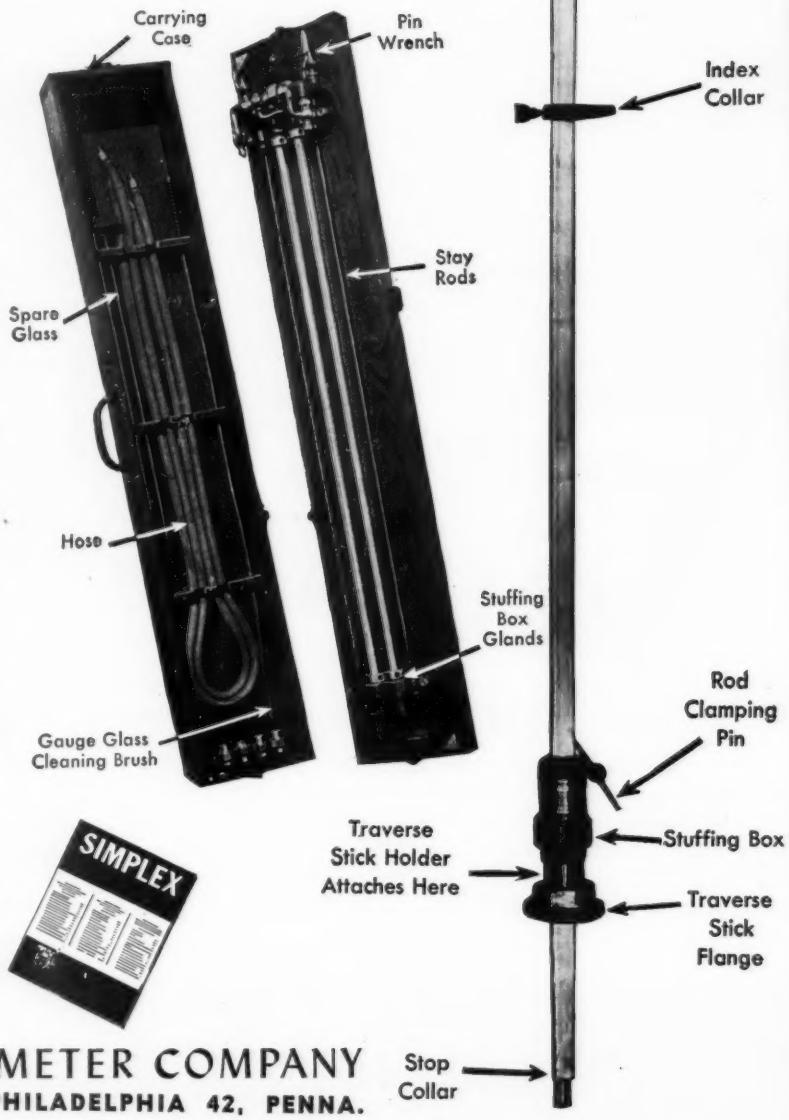
The Simplex Pitot Rod, Manometer and Pitot recorder are specifically designed for all tests or surveys where flow of water is concerned. These units are portable and yet ruggedly designed to withstand the continual movement from station to station.

The modern, streamlined, Type PF Pitot Rods are now available in standard lengths of 1′8″, 2′6″, 3′6″, 5′0″ and longer if required, to accommodate any diameter of pipe encountered in modern industrial plants.

Normally the Simplex Outfit #1, consisting of the Pitot Rod and Manometer, is all that is required for a comprehensive water waste survey. The portable Type MLC Recording Instrument is available for those who require a permanent record. 8″ diameter, evenly spaced, circular charts are employed with this recorder.

Simplex Valve and Meter Co. has had long experience in conducting water waste surveys and offers this modern line of survey equipment as the finest and most economical unit for this purpose.

We will be pleased to furnish additional information on the use of this equipment.



For descriptions and full operating instructions — write for Bulletin 50.

SIMPLEX VALVE & METER COMPANY
6789 UPLAND STREET • PHILADELPHIA 42, PENNA.

"OLD NO. 12" OPENS THE ROADS

A "Caterpillar" Diesel No. 12 Motor Grader, owned by Freedom Township, Wisconsin, rips into a deep, wet drift with its plow.

Widening and winging back after the first cut. 48 miles of two-way road were cleared in 23 hours.

CATERPILLAR

REG. U.S. PAT. OFF.

DIESEL

ENGINES • TRACTORS
MOTOR GRADERS
EARTHMOVING EQUIPMENT

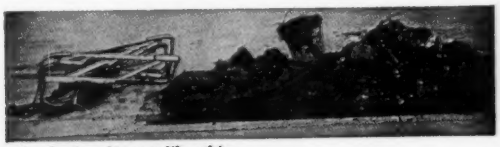
LAST winter Freedom Township, in Wisconsin, was hit by a big storm. Heavy and wet, with drifts up to five feet deep in many places, the snow halted practically all traffic.

While the storm raged, the township's "Caterpillar" Diesel No. 12 Motor Grader, equipped with snow-plow and snow-wing, was out on the roads. In 23 hours the big machine opened 48 miles of highway to two-way traffic. The first cut was made in low gear; the widening and winging back was done in 2nd gear; and the final clean-up in 4th gear. Fuel consumption was less than 3 gallons per hour.

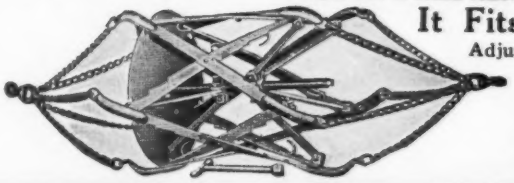
Many another northern town and county can tell similar stories of the snow-fighting ability of "Caterpillar" Diesel Motor Graders. "Old No. 12" is a famous name the year 'round on the country's highways.

CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS

EXPANDING ROOT CUTTER & SEWER CLEANER



Open and in action removing roots and caked sediment like this.



It Fits in on Every Sewer Cleaning Job

Adjusted in 30 seconds to fit any sewer from 8 to 30 inches.

Will clean the entire sewer wall, top, and sides as well as the bottom, cutting and removing the roots and caked sediment, putting the sewer system in almost 100% clean condition.

Write for our new catalog on complete sewer cleaning equipment.

EXPANDING SEWER MACHINE COMPANY

108 East Walnut St. Nappanee, Ind.

MH

High Quality

VALVES

HYDRANTS

AND WATERWORKS ACCESSORIES

M & H products, including pipe line accessories, are well known for high quality of material and expert workmanship. They are made according to standard specifications and have been used for many years throughout the country. Write for Catalog No. 34.

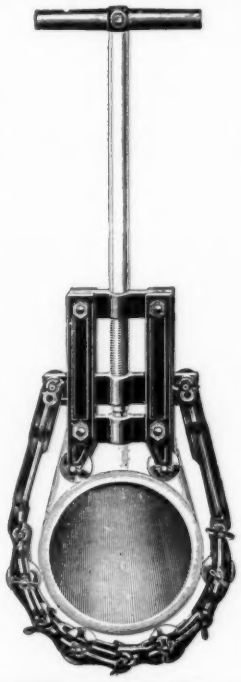
M & H VALVE

AND FITTINGS COMPANY

ANNISTON, ALABAMA

Buy **genuine parts for a genuine pipe cutter.**

For over 40 years "ELLIS" has been the favorite of water companies for cutting large sizes of pipe in or out of the ditch . . .



ELLIS & FORD MFG. CO.

148 So. Woodward Ave.

Birmingham, Mich.

MARTIN CARRYHAUL TRAILERS

TRADE MARK REGISTERED

MARTIN CARRYHAUL TRAILERS
"Make Hauling A Pleasure!"

Ease of loading, dependability and economical operation are three Martin CARRYHAUL Trailer characteristics which make them the leaders in the field.

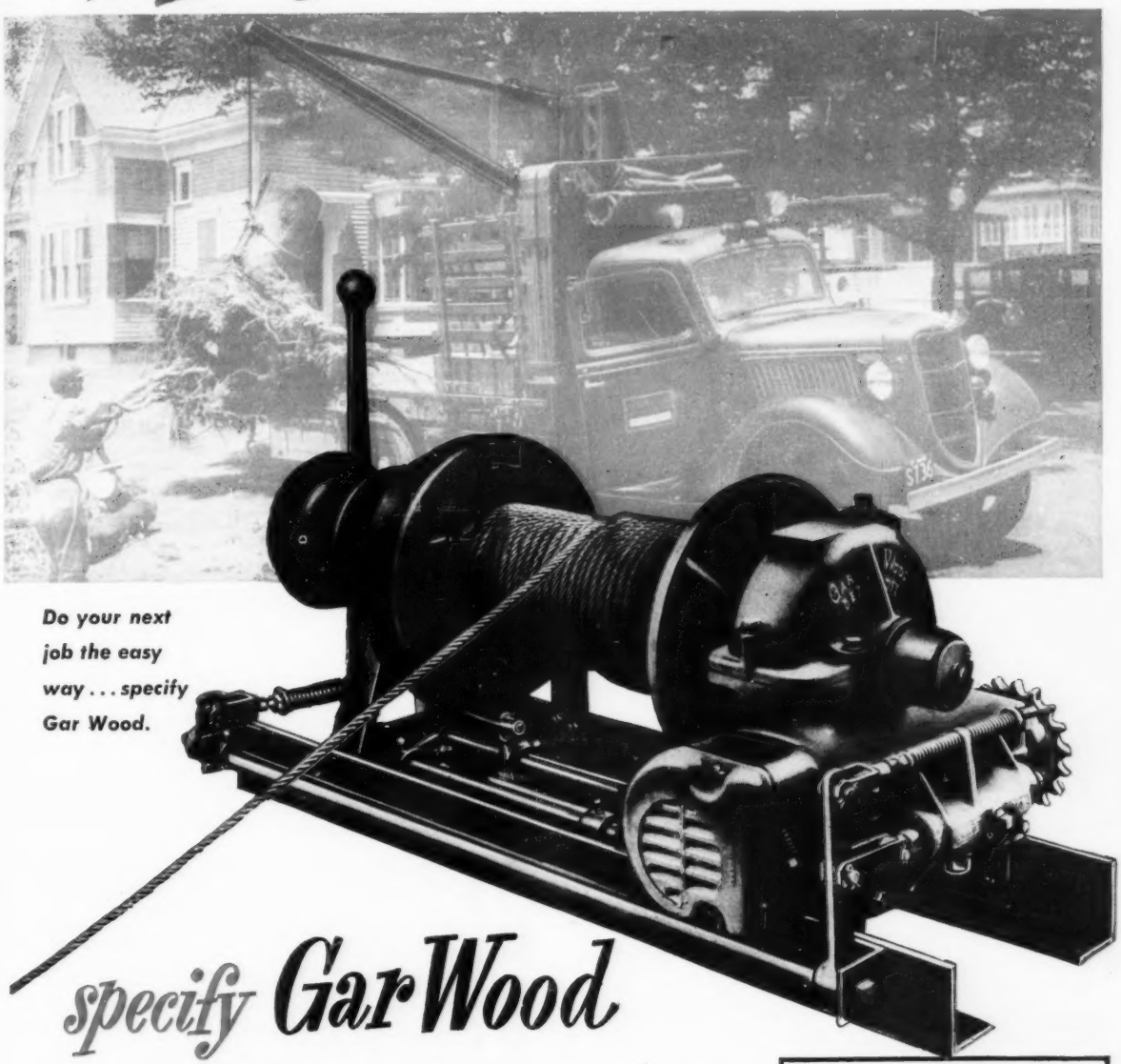
Regardless of your hauling job, there's a proper size Martin CARRYHAUL Trailer to do it for you safely and economically.

Your "CATERPILLAR" Dealer is your MARTIN Dealer. See him for your trailer needs.

MARTIN MACHINE COMPANY

KEWANEE, ILLINOIS

FOR *Tough* PULLS.. *Heavy* LIFTS



Do your next job the easy way . . . specify Gar Wood.

specify Gar Wood

You *can't beat* Gar Wood and Winches. For they're *all* designed, engineered, and built to do the toughest jobs with *maximum efficiency*, greatest safety, and *lowest upkeep*. Performance has been checked, tested, and *proven* in the field . . . round the world.

No matter how tough, how "impossible" your particular job may seem, there's a rugged Gar Wood Crane or Winch to help make it *easy* and economical and safe . . . help *you* make money, faster.

GAR WOOD
GW
TRADE MARK
INDUSTRIES

HOISTS BODIES • ROAD MACHINERY • MOTOR BOATS • WINCH AND CRANES • HEATING UNITS

AIR PLUS JAEGER COMPRESSOR

No place for a horse-and-buggy compressor

That constant power-packed wallop of a Jaeger Compressor behind your tools makes a real difference when you're fighting time to save dollars and finish the job. Built to the same micro-precision as the latest Caterpillar, International and Continental engines which power them, these "AIR PLUS" units unfailingly deliver all the air that's called for, at cooler temperatures and with less cost in fuel and upkeep than any compressor you have ever owned.

Ask your Jaeger distributor or write us for Catalog JC-5, the up-to-date buyer's guide on air compressors from 60 to 500 cu. ft.

THE JAEGER MACHINE CO.

Main Office and Factory—Columbus 16, Ohio

REGIONAL OFFICES

8 E. 48th St. New York 17, N. Y. | 226 N. LaSalle St. Chicago 1, Ill. | 235-38 Martin Bldg. Birmingham 1, Ala.

AIR COMPRESSORS, MIXERS, PUMPS, HOISTS, PAVING MACHINERY, TRUCK MIXERS — DISTRIBUTORS IN 120 CITIES

INFILCO

600 ACCELATORS INSTALLED

A Proven Principle of Water Treatment

The soundness of the exclusive Accelator principle of water treatment is being demonstrated daily in over 600 installations. There is nothing new or untried about it.

The principle involves the maintenance of a slurry pool at a constant level for varying flow rates and slurry concentrations so that clear, treated water will separate at a high rate at the surface of the slurry pool. This is accomplished by mixing one volume of raw water and chemical with approximately 15 volumes of previously formed slurry in the primary chamber, and the gentle discharge of 3 to 5 volumes of this mixture at the surface of the slurry pool. One volume separates and rises from the surface of the slurry pool, while the larger volume passes downward and back into the primary chamber. Excess solids are continuously concentrated and automatically discharged. Thus, the separate steps of quick mixing, coagulating, settling and sludge removal of older methods are combined in one compact unit.

This modern, streamlined water treating process applies the "Know-How" gained by Infilco engineers from many years of intensive research and development. Ask for Accelator Bulletin No. 1824. INFILCO Inc., 325 West 25th Place, Chicago 16, Ill.

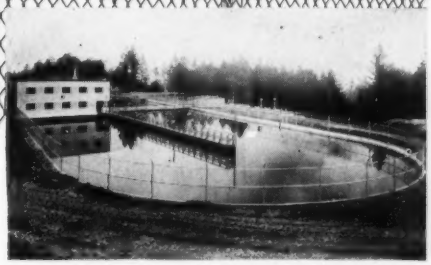
CONSULT INFILCO — FIRST IN WATER AND SEWAGE TREATMENT

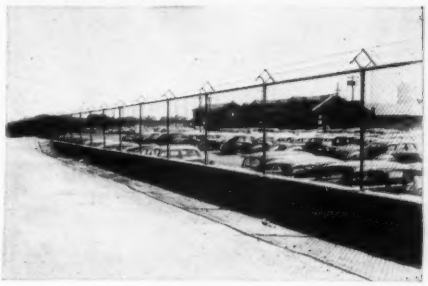
HAND STORAGE BATTERIES FOR MUNICIPALITIES

HAND storage batteries are heavy-duty batteries provided with heavy, hand-pasted tank-formed plates, heavy glass mats, acid and heat resisting micro-porous rubber separators, splash decks and genuine hard rubber containers. Built for use in Police Radio cars, Sanitation trucks, snow plows, sweepers, emergency trucks, ambulances, and fire apparatus.

The Hand Laboratory, Nyack, N. Y.

PATTERN FOR *Protection*





The diagonal mesh of chain link fence is a familiar pattern of protection. Easily and inexpensively installed, a chain link fence permits full use of property, prevents unauthorized entry and provides protection against arson, theft and other trespassing hazards.

Maximum protection is secured through the use of the five or six-strand barbed wire top finish. Three-strand barbed wire, barbed and knuckled selvages, are also available, depending upon the degree of protection required.

Only the best selected materials are used in making Wickwire, Colorado and Calwico Brands of Chain Link Fence fabric, which is further protected by hot galvanizing after weaving. Fittings are of malleable iron and pressed steel, heavily galvanized, or aluminum.

FREE ESTIMATES—We will be happy to measure your property, work out details to secure proper protection, and submit estimates for fence material ready for erection or covering complete installation by our trained crews. For free catalog and further particulars, write to our nearest branch office.

CHAIN LINK FENCE

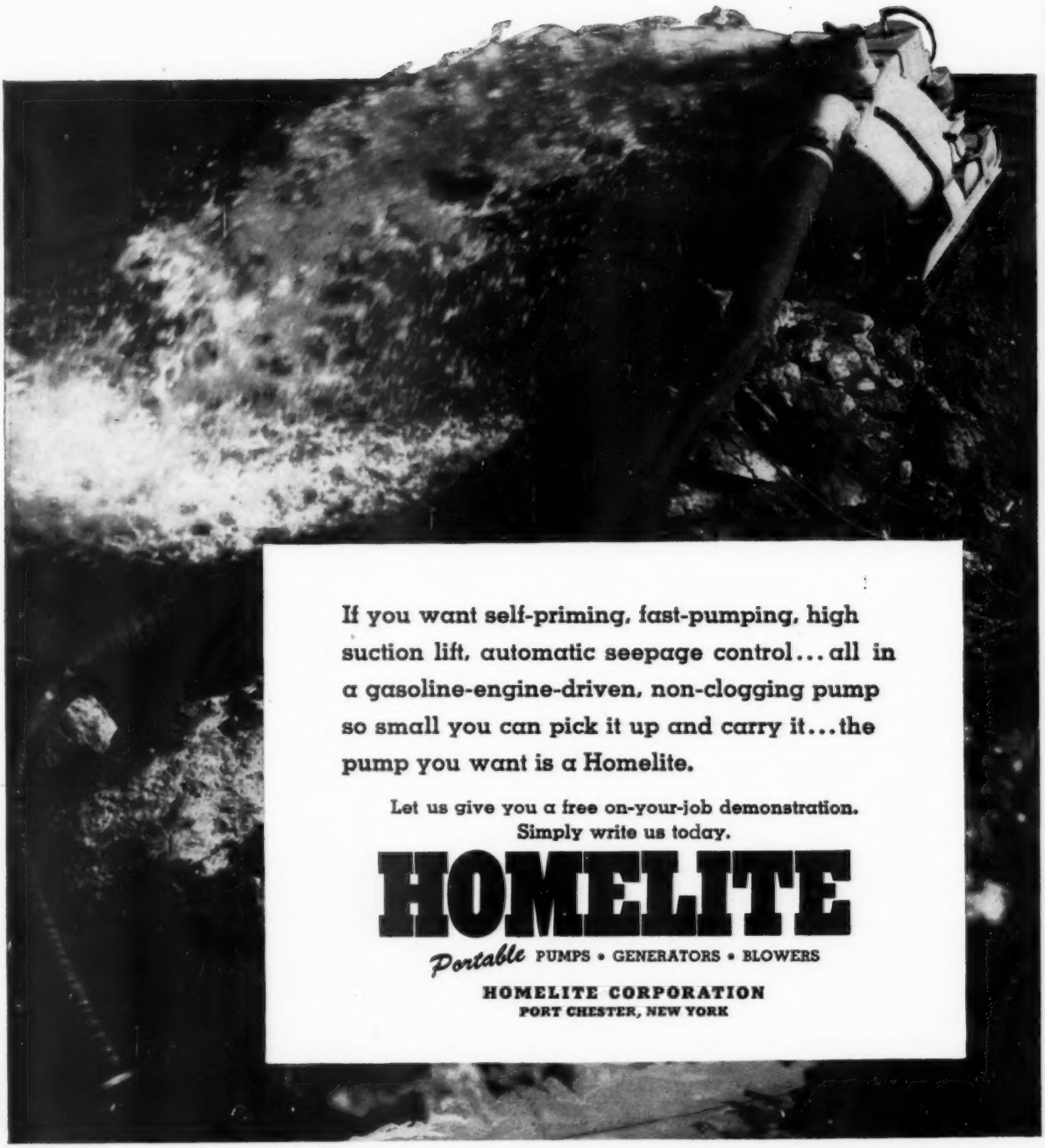
WICKWIRE • COLORADO • CALWICO

DIVISIONS OF THE COLORADO FUEL AND IRON CORPORATION

Wickwire Spencer Steel, 361 Delaware Ave., Buffalo 2, N. Y. — The Colorado Fuel and Iron Corporation, Continental Oil Bldg., Denver 1, Colo. — The California Wire Cloth Corporation, 1001 22nd Ave., Oakland 6, Cal.

CF&I

The Pump
TO PUT ON THE JOB



If you want self-priming, fast-pumping, high suction lift, automatic seepage control... all in a gasoline-engine-driven, non-clogging pump so small you can pick it up and carry it... the pump you want is a Homelite.

Let us give you a free on-your-job demonstration. Simply write us today.

HOMELITE

Portable PUMPS • GENERATORS • BLOWERS

HOMELITE CORPORATION
PORT CHESTER, NEW YORK

WILLOW FREEWAY, first part of the $250,000,000 program to relieve traffic congestion in Metropolitan Cleveland, is a 1.6 miles long project requiring the moving of 1,245,000 cu. yds. of fill and using 15,848 ft. of **Clay Pipe.**

BIG SAVING in time is gained when traveling the wide, new Willow Freeway (shown by heavy white line) as compared with old route through congested districts (dotted line). Savings gained by using **Clay Pipe** can't be pictured so easily, but they show up in long, trouble-free service that makes **Clay Pipe** cost far less in the long run. For this project, work is being executed by the State of Ohio Highway Dept., Perry T. Ford, Director of Highways. In charge is Robert J. Edwards, Asst. to Chief Engineer; Walter Anderson, Div. Construction Engineer. Contractor for first section is Lombardo Bros. Construction Co., Cleveland; W. P. Tooley, Chief Engineer; Edward Chadeayne, Job Engineer.

LOOKING AHEAD . . .

MODERN EXPRESS HIGHWAY DEPENDS ON **CLAY PIPE** DRAINAGE

CLAY PIPE NEVER WEARS OUT!

With an eye to the future, the new Willow Freeway is designed to give tomorrow's traveler a shorter, speedier southern entrance to Cleveland. And with careful thought of the future, it is being built with drainage pipe of CLAY . . . the material so impervious to all kinds of corrosion, rust and decomposition that it *never* wears out! In bridge abutments, retaining walls, and wherever extra-heavy loads were encountered in the Willow Freeway, Extra-Strength Clay Pipe was specified. Engineers are finding increasing use for Extra-Strength Clay Pipe on all types of highway, airport, railroad and construction jobs. Extra-Strength Clay Pipe is *dependable* because it stands up under extra-heavy live and dead loads, and it is *economical* because it eliminates cradling costs.

NATIONAL CLAY PIPE MANUFACTURERS, INC.

111 W. Washington St., Chicago 2, Ill.

522 First National Bank Bldg., Atlanta 3, Ga.

1105 Huntington Bank Bldg., Columbus 15, Ohio

571 Chamber of Commerce Bldg., Los Angeles 15, Calif.

C-946-2

STREAMLINE

TRADE MARK REG. U. S. PAT. OFFICE

COPPER PIPE AND FITTINGS

FOR PIPING *Permanence*

Water works officials who are responsible for the return on on a very heavy capital investment have in STREAMLINE Copper Pipe, one of the most effective and low cost forms of insurance that they can adopt. It is the ideal material for water service work.

STREAMLINE Fittings are not connected by threading or flaring the pipe but by an entirely new and revolutionary method that utilizes nature's law, capillary attraction, to form one of the tighest and strongest joints known to the trade.

STREAMLINE Copper Pipe cannot rust and since it is not connected by threading, the wall need not be so heavy. Pipe which is threaded to connect must have a much heavier wall because the thread diminishes its thickness and the strength of the pipe is therefore limited to this diminished wall thickness, while on the balance of the pipe expensive surplus material remains, but gives no extra service for its additional weight and consequent cost.

STREAMLINE Copper Pipe utilizes only that wall thickness required for actual service and the fitting actually reinforces the connection, making it the strongest point, while with threaded pipe it is the weakest.

A STREAMLINE service line is vibration proof. Settlement of filled earth or water mains, etc. does not affect it. STREAMLINE Fittings and Copper Pipe are the ideal materials for water works use; for many applications in filtration plants; in aeration lines and in heating coils using the sludge digestion system in sewage disposal plants—and for all general plumbing and heating purposes.

Plan to install STREAMLINE Copper Service Pipe for postwar use.

STREAMLINE
PIPE AND FITTINGS DIVISION
MUELLER BRASS CO.
PORT HURON, MICHIGAN

It's Here!

THE NEW MODEL 3

ATHEY FORCE-FEED LOADER

The new Model 3 Athey Force-Feed Loader is here! As a result of five years field performance and engineering research, Athey proudly presents this latest addition to its line of loading and hauling equipment. Every State, County and Township Highway Department will find the new Model 3 the fastest, most economical answer to its loading problems. It is new in features of design — new in performance. Such design features as "Finger-Tip" hydraulic control, new conveyor design for faster loading, new protection for the power plant, greater operator comfort and better visibility are only a few of its outstanding developments. It's the last word for loading on road widening and resurfacing jobs, ditch building and cleaning, dressing slopes, loading oil mix, etc. It has smooth, clean pickup of all types of materials, high rate of production, one-man operation and "one-lane" loading which does not interfere with the normal flow of traffic. Investigate the new Model 3 today. See your Athey-"Caterpillar" Dealer, or write direct to ATHEY PRODUCTS CORPORATION, 5631 West 65th Street, Chicago 38, Illinois.

with "Finger-Tip" Hydraulic Control

Four levers operate the hydraulic controls for raising and lowering feeder, moldboard, throat and conveyor. The last word in operating simplicity and accurate control.

Athey DEPENDABLE LOADING AND HAULING EQUIPMENT

Kansas City, Missouri, Motorcycle Squadron Uses HARLEY-DAVIDSONS Exclusively!

In this squadron, led by Sgt. Harris, are 26 of 51 Harley-Davidsons in police service in Kansas City. Supt. of Traffic, Henry Johnson — Police Chief, R. R. Foster — and Supt. of Garage, Lt. Dick Morris (who are not shown in this photo) can well be proud of their entire traffic squadron which is equipped with 39 solo Harley-Davidson Police Motorcycles and 12 Servi-Cars.

No Other Method Can Match Motorcycles In Handling Today's Increased Traffic Demands

IN every city from coast to coast, traffic problems have reached an all-time high. Police departments are intensifying their activities to cope with these problems — and more important, to curb traffic accidents and prevent the terrific toll of injuries and deaths from surging higher and higher.

For greater efficiency, Kansas City's motorcycle squadrons use Harley-Davidsons exclusively. Like many other cities, both large and small, this great midwestern center knows that no other method can match motorcycles for extending the range and effectiveness of police manpower in every phase of traffic control and accident prevention. Call in your Harley-Davidson dealer today . . . get complete information about the superiority and many advantages of the new 1947 Harley-Davidson Police Motorcycles and Servi-Cars.

HARLEY-DAVIDSON MOTOR COMPANY • Milwaukee 1, Wisconsin

FWD..THE TRUCK THAT'S USED WITH EVERY TYPE OF SNOW PLOW

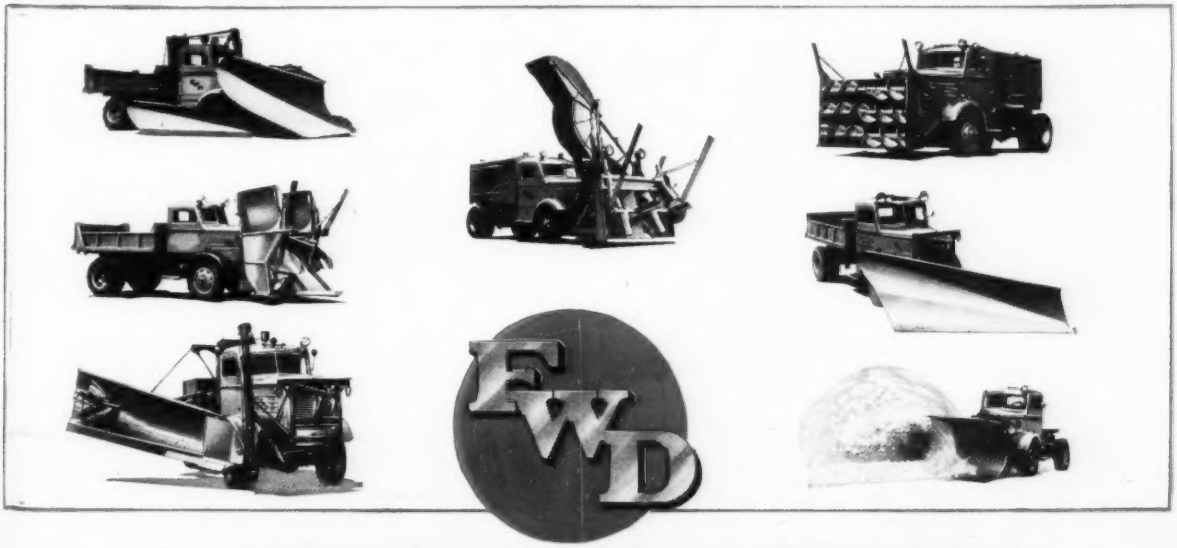
Today, more snow plows of various kinds are mounted on FWDs than on any other make of truck or tractor. More FWD four-wheel-drive trucks are sold and used for snow-removal than all other makes of four-wheel-drive trucks combined. FWDs have the driving strength, power, and all-wheel-traction required for the tough business of busting heavy snow-banks and opening up roads and streets, fast and clean!

FWD . . . the truck for MANY jobs . . . is also doing outstanding work in road grading, blading, ice-removal, hauling, road construction and maintenance, and many other heavy-duty jobs.

See the nearest FWD Distributor, or write to

THE FOUR WHEEL DRIVE AUTO COMPANY
CLINTONVILLE, WISCONSIN
Canadian Factory: KITCHENER, ONTARIO

HUNDREDS OF FWDs NOW IN SERVICE EQUIPPED WITH EVERY TYPE OF SUCCESSFUL PLOW



America's Foremost Heavy-Duty Truck

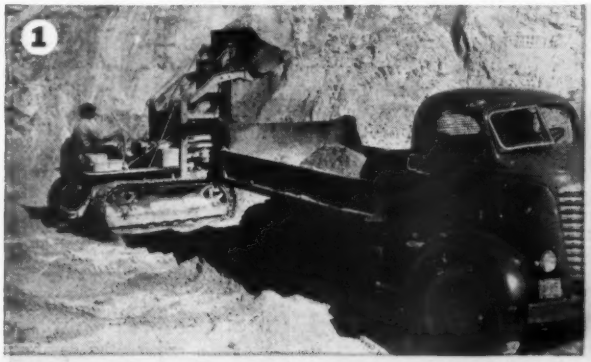
No Seasonal "Down-Time" when you . . .

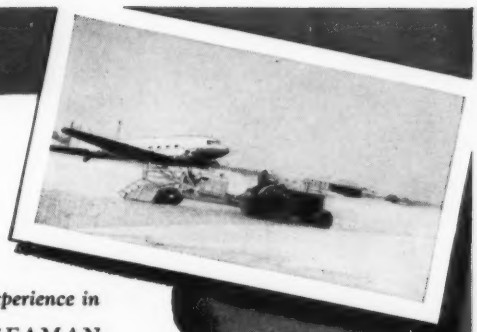
TRAXCAVATE!

Year around PERFORMANCE makes Tax Dollars do Double Duty

GREAT workers, TRAXCAVATORS! On your spring and summer street work these versatile machines can be used for (1) digging and loading sand, gravel or borrow material; (2) ripping up and loading old pavement; (3) cleaning leaves from gutters in the fall; (4) removing snow from city streets in the winter. TRAXCAVATOR versatility only begins here. Many other jobs, such as excavating, dirt-moving, loading from stock piles, grading, leveling, ditching, park and playground work, removing trees, terracing are made-to-order for these multi-purpose machines.

TRAXCAVATORS, powered by "Caterpillar" track-type tractors, are highly mobile, easy to transport on city streets, travel around jobs under their own power at speeds up to six miles an hour. Bulldozer blade and ANGLEGRADER attachments are also available to further increase TRAXCAVATORS' usefulness. Ask your TRACKSON-"Caterpillar" dealer for the facts, or write TRACKSON COMPANY, Dept. AC17, Milwaukee 1, Wisconsin.





After snow is pulverized with the SEAMAN it can be compacted to form safe, smooth, hard runways.

An Evaluation Of The Seaman Mixer In Alleviating Hazardous Ice And Snow Conditions On Public Thoroughfares And Airfield Runways

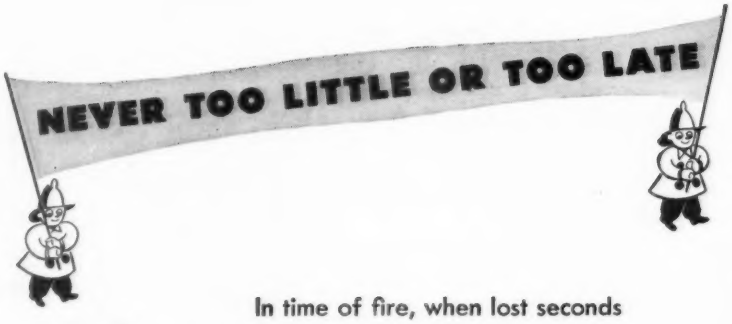
Five winters of experience in the use of the SEAMAN MIXER, equipped with a special ice rotor in meeting several phases of problems brought about by ice and snow, indicate that its value may come within the following applications and limitations:

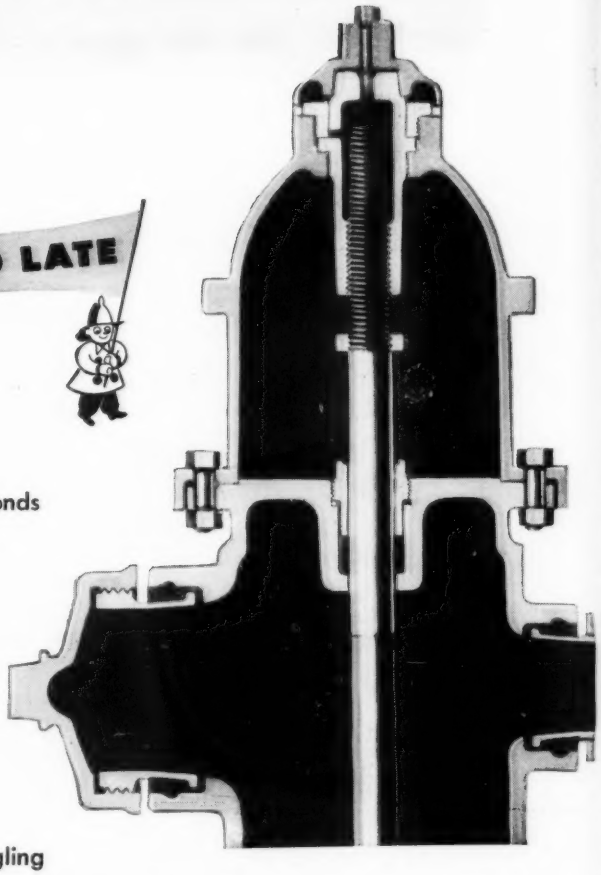
1. For the fragmentation of ice of ½" to 3" thickness on paved surfaces, — to facilitate removal. If, however, frozen within the ice-slab are considerable quantities of straw, — gravel or similar material, — fragmentation is impossible and the ice must be pulverized in successive passes with the SEAMAN MIXER in which the machine has chiefly a grinding function.
2. Where traffic has created dangerous ruts in ice-covered thoroughfares, — the SEAMAN MIXER will effectively grind the ice surface down to the rut base, — thus producing a level area.
3. Where excessively slippery iced areas are encountered, the SEAMAN MIXER may be used to roughen the surface, — which in turn will make more effective the action of sand or other traction-increasing material which may subsequently be applied.
4. Where hard, compacted, frozen snow drifts create a hazard, the SEAMAN MIXER will penetrate and pulverize the mass to dissipate it or facilitate removal.
5. To pulverize rough, compacted snow on airfields to permit mechanical recompaction to form a level safe snow runway.

The SEAMAN shatters ice on runways or highways in [illegible]

For complete information write to:

SEAMAN MOTORS, Inc.
305 North 25th Street
Milwaukee 3, Wisconsin





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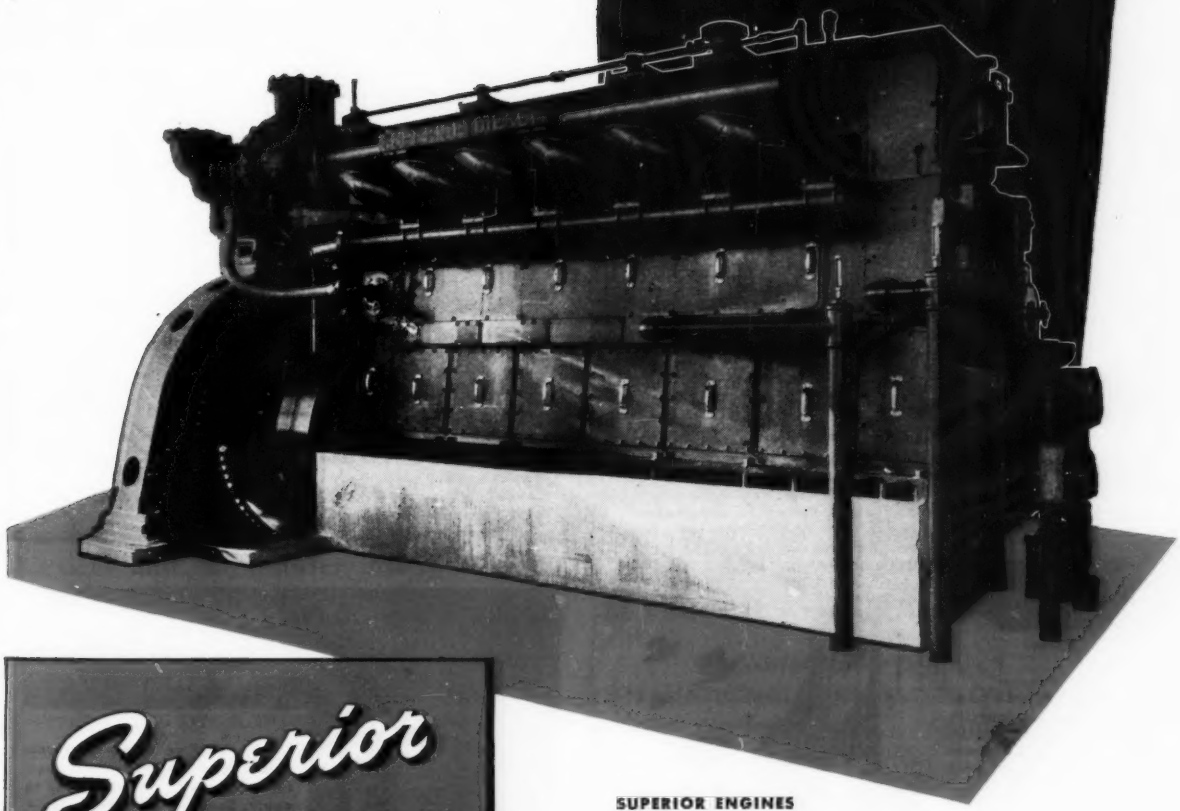

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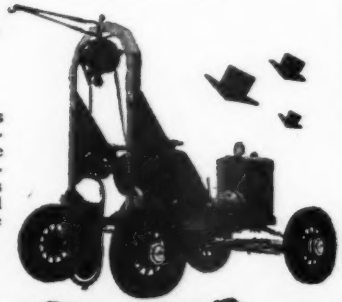

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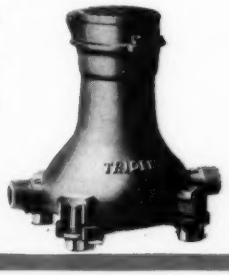

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Volume LXII Number 1
JANUARY 1947
The American City

Oklahoma City's DeLuxe Water Treatment Plant

. . . If it is a good idea . . . if it will produce a better water service for the people of Oklahoma City, Superintendent M. B. Cunningham gives it unprejudiced, thorough consideration. The city's new 15-mgd plant shows the benefits of this thinking.

AMPLE raw water storage capacity in a lake located alongside the plant, with the water elevation such that the first 10 feet, representing 23,000 acre-feet of water, will flow through the plant by gravity; improved chemical handling equipment; one of the few underwater burners in the country for recarbonating filtered water, with its operation controlled by a recording pH meter; filters with anthracite filter medium and a surface wash for easier cleaning; breakpoint chlorination and phosphate addition for final stabilization of the water—all of these are highlights in a plant that gives other cities an example to hold up when talking about water treating excellence.

The Oklahoma City plant wasn't easy to build. Officials hoped to start construction back in 1941 with a 30-mgd plant as their goal. However, a conscientious but ill-advised injunction stopped this move while investigators tried to decide whether prices were too high. Although the suit fell through, it nevertheless was expensive for the city—costly enough to force Superintendent Cunningham to lower his sights to 15 mgd and arrange his plant so that the balance could be supplied later. The design does just this. At no very great cost, he can add filters and settling basins and handle 30 mgd, and finally 60 mgd if necessary.

The added facilities were needed badly. The old plant worked heroically during the war to meet its demand, and for a while the water department thought that when the war ended this peak would drop off a bit.

Post-War Use Remains

However, as municipal officials all over the country have discovered, this let-up never occurred. The demand for water is today as great as or greater than it was during the worst of the war. The present plant has a capacity of 24 mgd, but all this last summer the city has been pumping 32 mgd, and on August 9 the pumps hit a peak of 38.6 mgd. In fact, on that day the pumps simply weren't equal to the demand, and parts of the city had no water. The present plant will remedy this. Superintendent Cunningham intends to run it at capacity and make up the balance from the old plant.

The new plant draws its supply from the big impounding reservoir through a 48-inch cast iron line. A 6-by-7-foot box goes through the dam and forms the intake. This intake is protected from the intrusion of fish by an electronic fish screen. As mentioned previously, the first 10 feet of water in the reservoir will flow through the plant by gravity. Any taken from a lower level than this is picked up by dual-motor Worthington pumps, with one motor for low-lift through the plant and one for high-lift to the plant. There are two of these pumps, one a 10-mgd and one a 5-mgd. The 10-mgd pump is powered by a 40-hp G-E motor for low-lift and a 100-hp motor for high-lift. Similarly, the 5-mgd pump has 20- and 50-hp motors. Prior to pumping, actually 1,000 feet ahead of the application of coagulants, the water receives 3 to 6 ppm of chlorine, which is applied by Wallace and Tiernan automatic proportioning feeders through a 4-inch rubber-lined pipe. These applications are expected to reach the breakpoint.

Following pumping, the water passes through a 48-by-24-inch Builders' Iron Foundry recording venturi meter and then proceeds to receive its application of lime, alum, and soda ash if necessary. The plant has an arrangement, at this point whereby it can use return sludge to cut the chemical dosage. Omega gravimetric feeders with Infilco thermostatic-controlled lime slakers feed the chemicals directly from the gravity bins. The bins are fed by Link-Belt screw conveyors, with a bucket elevator bringing the chemicals to the top of the bins and the screw conveyor bringing it across to the

Oklahoma City's new water treating plant. From right to left: the wash water tank, the filter and administration building, the chemical building, and then the flocculating and settling tanks.

proper location. A motor-operated rotary gate makes the bin selection.

After receiving its application of chemicals, the water goes to a Dorr flash mixer for one minute and then proceeds to a Dorr flocculator for a 30-minute retention. These flocculators have Reeves speed reducers to vary the speed from ⅓ to full capacity.

The water with its floc then goes to a Dorr clarifier designed for a detention of one hour and 45 minutes at 15-mgd flow. After 30 minutes' additional settling, the water is recarbonated by an Ozark underwater burner. This unique recarbonating unit, one of the few in any water treating plants of the country, burns natural gas beneath the water, controlling its operation automatically from readings made by a Leeds and Northrup pH recording meter. Filtration Engineer Taylor first experimented with one of these at the old plant, and its successful operation has prompted him to become one of its enthusiastic supporters.

A set of four 3.75-mgd Infilco filters furnishes the final major step in the treatment. These filters have Wagner bottoms with 3-inch cast iron laterals with 7/16-inch openings. The filters have 18 inches of 1½-inch gravel laid on the blocks. This is then topped by 3 inches of No. 2 Anthrafilt 3/16 by 3/32-inch size, and this by 27 inches of Anthrafilt with 0.7-mm effective size. A Palmer surface wash controls the formation of mud balls on the filter. Rensselaer hydraulic valves admit the raw water to the filters, and Darling valves govern its release to the clear well.

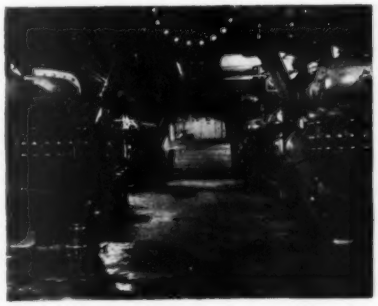
Uses Phosphate Stabilizers

At the clear well, with its 0.75-mg capacity, the water receives two protective treatments before the Worthington pumps deliver it to the distribution system. The first of these is that of post-chlorination to assure a residual throughout the system. The next is a treatment of Calgon to stabilize the water and protect against the possibility of corrosion.

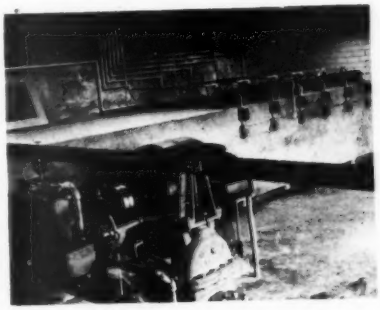
To wash the filters, the plant has a 150,000-gallon Chicago Bridge and Iron welded wash water tank. This tank is protected against corrosion by the cathodic action of a set of Rusta Restors, which were supplied by the Johnston & Jennings Company. These are built with a new type of platinum wire electrode, covered with a plastic removable electrode, which can be withdrawn during the winter months, thus avoiding the possibility of electrode by ice.

As mentioned previously, the plant has a nominal 15-mgd capacity, limited at present by the filters, flocculators, and clarifiers. However, its pumping capacity is 20 mgd through the use of one 10-mgd pump and two 5's. Flume lines and chemical handling are adequate for 30 mgd.

Another unique feature of this plant is a large laboratory, completely equipped with all the necessary appa-



The array of hydraulic valves and piping makes an imposing-looking tunnel.



The operator is provided with push-button control (at right) over the chemical-feeding operation. At the left is the pump that delivers the water to the flocculation and settling basins. Ample room remains for additional pumps when required.

The flocculation and settling basins.

ratus for water testing. This, supplied as part of the engineering contract, includes Sheldon laboratory furniture, sinks, fume hood, cabinets, refrigerator, and a special sink with six electric sampling pumps that bring water samples from various parts of the plant for control testing. A second smaller laboratory furnishes a place for special testing work or for research work.

This laboratory will assist the water department officials in maintaining strict control over water quality. Their practice is to run chemical control tests hourly throughout the treatment plant processes, and to make bacteriological tests twice daily on samples of water throughout the plant, and finally to collect samples several times each week at various points over the city distribution system as a final check on the quality of water delivered to the consumers.

A typical analysis of water in the distribution system reveals the following characteristics:

Total alkalinity	35 ppm
Phenol alkalinity	15 ppm
Caustic alkalinity	0 ppm
Noncarbonate hardness	65 ppm
Magnesium	8 ppm
Total hardness	100 ppm
Calcium	27 ppm
Turbidity	0 ppm
Silica	5 ppm
Iron and alumina	1 ppm
Sulphates	100 ppm
Chlorides	90 ppm
Carbonates	18
Bicarbonates	6 ppm
Total solids	350 ppm
pH	9.3

History from 1900

The plant represents a step in a long-range development of water for Oklahoma City. The city first began furnishing water in 1900 to a population of slightly more than 10,000, the supply at that time being a series of wells.

The year 1922 saw the abandonment of the well supply in favor of Lake Overholser, a man-made impounding reservoir of 17,000 acre-feet, and the construction of the original filter plant. The impounding reservoir used the hollow type Ambursen dam design for water retention. The lake was raised 4 feet in 1934 to give it its present capacity, although 2,000 acre-feet of this is taken up by silt.

In 1939, a committee from the Oklahoma City Engineering Club prepared an exhaustive report for the mayor, city manager and the city council of Oklahoma City, who were studying a proposed water supply and water works improvement for the city. This report analyzed several sources of water, discussed the economic feasibility of bringing it to the city, and made recommendations as to which appeared soundest from an engineering point of view. On the basis of these recommendations, the city built its new impounding reservoir and the present new filter plant. V. V. Long and Company, Oklahoma City consulting engineers, designed the project and supervised its construction. Harmon Construction Company, Oklahoma City, were the contractors.

"Mom" State and "Sonny Boy" City

By BARNET HODES
Corporation Counsel, City of Chicago

This vigorous and humorous plea for municipal independence from outmoded state domination and for a closer relationship between the cities and the federal government was voiced by the author in his discussion of current municipal problems at the twenty-third annual meeting of the American Municipal Association, held in Chicago November 18-20.

WE ARE all familiar with the origin of the municipality's role of legal infant in the establishment of our federal government. We are all aware of the fact that nearly 95% of our entire population lived on farms when the Constitution was adopted in 1789. At that time, the largest city was Philadelphia, with a population of 28,522. We can quite readily understand why the founding fathers would ignore cities, which held only 200,000 of the 3,929,214 inhabitants of our country, in drafting a constitution. There were no cities, in the modern industrial, social, economic, political sense, 150 years ago. The people's rights could safely be entrusted to the soverign mother states.

But in an era of atomic energy, in a predominantly industrial economy, in a metropolitan civilization, why should our cities be denied the legal autonomy for which they are eminently fitted? Why should they be tied to archaic methods of raising revenue? Why should they be subjected to state controls, which, in effect, mean hostile, rural, custom-encrusted controls?

In the past some of us have criticized state domination of our cities as a throw-back to our gas-light, horse-and-buggy pioneer days. It is just beginning to dawn upon us, however, that downstate folk, and in some states upstate folk—if not most folk—really love the gas-lighted, horse-and-buggy past. To compare the hopelessly ineffective real estate and personal property tax to an ox-cart, appears merely to evoke nostalgic sighs from the average state legislator. Efficiency, statistical studies, the findings of students of political science are as unwelcome to him as symphony music at a good old-fashioned fiddling contest.

Could It Be?

Could it be that because our state legislatures had their infancy in days when a simple farm economy prevailed, they are unable to face the cold facts of our complicated technical, metropolitan, fourth-dimensional present? Could it be that our states are like the neurotic mothers—the "moms" recently described by one of our foremost psychiatrists—who hate to see their sons, the cities, grow up and take their place in the world as adults?

Mama-state may be a former belle of high quality like Virginia, who loves to talk about her cavalier ancestors. Or she may be one of those rugged pioneers who crossed the wilderness and helped break the sod of our midwest prairies—like Mom Illinois smoking a corn cob pipe and not above laying a bet on a horse—but raising old Ned every time Sonny Boy Chicago attempts to assert his independence. Or again, Mom may be a more progressive type—like Mom Wisconsin who leaves her butter-churn and cheese-press and hangs up her apron every once in a while to take in a community meeting on social legislation. Or she may even be a fairly modern Mom, like California, who goes Wisconsin one better in trying out new furniture and letting Junior go out Saturday nights and have his own spending money.

Whatever her social stature, wealth or inheritance, Mom State—my state and in most respects your state—in some way or another manages to tie Sonny Boy to her apron strings. Mom State won't face the fact that Sonny Boy is now a big boy—lots bigger than she is and the main source of the family revenue. She ignores the fact that, if it weren't for him, she and the rest of the family would starve.

Of course, Sonny Boy should be on his own—but Mom won't let him and it's lucky sometimes for Sonny Boy City that the family has a great-Uncle Sam—a sort of ward and trustee for all that's left of the family estate on which Mom didn't get her hands. In fact, it was to Uncle Sam that Sonny Boy had to turn, first to pay the doctor's bills when he got sick from eating too many apples and again to pay for a new shotgun, the time a couple of neigh-

bors turned out to be gangsters, who wanted to take over the whole estate. And just now Mom is calling Uncle a "moocher" and warning Sonny to have no truck with him because "Mama knows best"!

Drastic Action Called For

Not to pursue my metaphor any further, I most seriously lay before you the proposition that the nation-wide retreat to the immature past—the unwillingness of our states to face the facts of the modern world and grant our municipal governments the constitutional powers they require and are fully capable of exercising—calls for drastic action.

We cities are economically mature, and we must take our place in the nation's economy as autonomous governing bodies. The state's-rights fol-de-rol which inhibits us today from meeting the obligations of the citizens who live in our cities, as we have the economic and technical means of doing, should be laid away in old lavender. Should most of the states refuse to give up their control, we must cut the silver cord through federal action.

Our first objective must be the winning of full municipal home-rule rights from the states which have not already granted them. Our next must be the establishment of a department of the federal government to preserve, strengthen, and expand our present federal-municipal relations as the need arises. Our last should be a complete and objective study of the reorganization of our entire federal-state-municipal structure and of the reorganization of municipal government itself, so that legal and administrative municipal powers coincide substantially with geographical limitations and functionally with the tasks that a new era has imposed on us.

Changing Patterns in State-Local Relations

ASSERTING that state-local relations don't change fast enough, Morton Grodzins, director of research, Committee on State-Local Relations, Council of State Governments, Chicago, outlined at the recent American Municipal Association conference two principal objectives for a reorganized system of state-local relations in a four-fold program as a sound and workable basis for action. To quote in part:

Two Principal Objectives

1. Local units of government should be strengthened in every possible way. This is necessary for administrative efficiency: localities must have sufficient fiscal resources to meet their ever-increasing responsibilities. And local strength has a larger significance: its maintenance is important as a means of attaining meaningful local democracy.

2. State supervision of local affairs should be improved so that activities of state-wide concern will be efficiently carried out in all jurisdictions. Local freedom is a limited freedom for the simple reason that local activities cannot be neatly confined within local boundaries. There is an ever-growing awareness of a state-wide, and even a nation-wide, responsibility in matters that were once considered purely local in character. States must therefore devise means of supervision over localities so that state-wide problems may be met with effective state-wide programs.

States and localities are parts of a single governmental mechanism, and there is no inconsistency within these objectives. More effective supervision by states will lead to stronger local governments; strong local governments, in turn, will use their discretionary authority to achieve the more efficient fulfillment of their own, and of state-wide, programs.

A Four-fold Program for Action

Based on the recommendations of the Committee on State-Local Relations of the Council of State Governments, Mr. Grodzins suggested:

(a) *That localities be granted a wider scope of discretionary power than they now possess.* This includes, for example, abandoning all state restrictions with respect to the adoption of city manager government and abandonment of many limitations with respect to the administration of a wide category of local functions.

(b) *That the fiscal position of local governments be strengthened;* this to be done through diversifying local taxes or increasing the scope of state aid, or both. As the main reliance, Mr. Grodzins prefers state aid, but he would not rule out some judicious enlargement of the local tax base.

(c) *That flexible administrative supervision be substituted for detailed state legislation on local affairs.* Such supervision is not state dictation. It is primarily state service, state advice, and state cooperation. It is a means of freeing localities from the rigidity of legislative controls. And it has the valuable by-product of encouraging high standards of administration for the internal affairs of our various local governments.

(d) *That the areas of local government be enlarged through consolidation.* "In the end," Mr. Grodzins pointed out, "local self-government can be achieved and local democracy can have meaning only when the local government is structurally sound; when it serves an area large enough to permit the economical discharge of public functions, and when it has sufficient revenue capacity to insure local responsibility for a large portion of local services."

Lessons for Many Cities in Kentucky Study

STRESSING the need for "stretching" each city dollar, *Kentucky City Finances,* prepared under the direction of Professor James W. Martin, Director of the Bureau of Business Research, University of Kentucky, contains material with more than local implications.*

The report is directed primarily toward discovering and analyzing practical possibilities for greater financial freedom for Kentucky cities. It covers the whole area of city fiscal management, expenditures, revenues, and debts; and it attempts to find and appraise any available means of economy in expenditures and possibilities for increasing revenues.

In the "dollar-stretching" process, the report emphasizes, good financial management can save every city money and can more fairly distribute the costs and benefits of local governments. Good budgeting, accounting, and reporting practices are prerequiste to sound administration, the report points out — a conclusion which municipal officials everywhere should seriously consider.

However, the cities studied are so short of revenue that, even with ideal administration, they must find additional funds if they are to support the services for which their people are willing to pay. The writers of the report recommended that in this quest for more money the cities place primary stress on modernizing property tax administration and improving assessment practices. The possibility of increased local revenues from state sources is also examined in the study.

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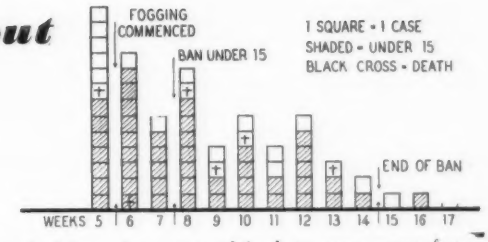
* *Kentucky City Finances* (Bulletin of the Bureau of Business Research, No. 12). Lexington: University of Kentucky and The Kentucky Municipal League, 1946, $2.50. 275 pp.

What San Antonio Did About

Polio


FOGGING COMMENCED
BAN UNDER 15
1 SQUARE = 1 CASE
SHADED = UNDER 15
BLACK CROSS = DEATH
END OF BAN
WEEKS 5 6 7 8 9 10 11 12 13 14 15 16 17

When a city is faced with a polio epidemic, it is in no mood to experiment. San Antonio looked for causes of the outbreak and set about correcting them.

FROM a clinical standpoint, experts in the field of epidemiology agree that very little can be done to control an outbreak of poliomyelitis. It is their opinion that when an epidemic hits a community it will simply have to run its course and strike down those who are susceptible.

But last May, when San Antonio found an epidemic of this nature on its hands, its board of health refused to accept this attitude. Dr. P. I. Nixon, chairman of the board, ignored the academic controversy and put into effect measures that took into account all possible methods of transmission.

Certain methods of transmitting the polio virus seemed to the board to cover the situation. These included direct contact, which investigators feel is the most likely method of transmission; contact through water-borne sources; and contact through flies and other insects that breed on filth.

The direct contact method of approach has certain factors about it that make control difficult. Investigators feel that there may be "carriers" of the virus, just as there apparently are carriers of the typhus bacillus. A great number of people also appear resistant to polio and are perhaps carriers without contracting the disease. Thus, unless all people are isolated from each other and have no further contact, one cannot very easily have complete control. Nevertheless, Dr. Nixon and the other members of the board of health felt that some control was better than none and proclaimed a ban on the gathering in public places of young people between the ages of fourteen and twenty. They were forbidden to attend theatres, churches, or other public gatherings; were not permitted to visit parks or swimming pools, and also were advised to stay away from buses, stores, and similar crowded places. This ban was criticized severely, but the board of health feels that no particular harm resulted from its enforcement and much good perhaps resulted.

The possibility that the virus might be carried by some water-borne source has also been subjected to a great many criticisms. Analyses of the occurrence of the disease show it appearing at scattered places throughout a city without any particular reference to the character of the water distribution system. On the advice of the state department of health, however, the city water board, under the guidance of Dr. George W. Cox, increased its chlorine dosage. Tests indicate that such chlorination practices will inactivate the virus if it appears in a water supply.

Whether flies are a factor in the spread of polio is another point on which investigators have not agreed. Present evidence does not indicate that that carry the disease; they may,

San Antonio uses the fogging machine to rid the city of flies and other insects.

the investigators agree, but nothing positively points to them as guilty. As a matter of fact, in many cities, the chief sufferers seemed to be children in the higher-income homes, thus indicating that the disease has no relation to filth. Nevertheless, the opinion that flies *might* be a factor was enough for San Antonio, and the city embarked on one of the largest and most thorough clean-up campaigns in its history.

The San Antonio Chamber of Commerce, under the direction of C. J. Crampton, obtained priorities in garbage cans and wire screenings and procured pressure sprays from Fort Sam Houston for use on the garbage dumps. The cooperation of the Fort Sam Houston motor pool and Kelly Field motor pool was extremely valuable. These pools furnished trucks and drivers for the transportation of field workers and for the TIFA fogger when such equipment was not otherwise available. The War Assets Corporation not only procured much-needed equipment for the department of parks and sanitation, but it assisted the health department in procuring DDT products at two surplus sales at a considerable saving.

Spraying the city with TIFA fogging machines was particularly effective, Dr. Nixon states. The machines were used first in a four-block radius around each polio case. Later the entire city received a block-by-block coating of the insecticide.

Fly Factor Questioned

Many officials feel that the work under the direction of Sanitarian R. L. Marvel was a major factor in the eradication of the disease. Polio authorities, however, are not convinced that this experience was conclusive. They recognize that almost immediately after the application of DDT a subsidence in the number of cases occurred. But they point out that if the fly had been a factor, this drop in cases would not have been so prompt. A lag of two weeks would have been more likely, since that length of time is required for the incubation period of the virus, and those who acquired the virus immediately prior to the spraying would normally be expected to become a victim within the two-week period. It is their feeling that by that time the epidemic had run its course and was tapering off of its own accord. Dr. Nixon does not attempt to refute this. To him the important factor is that the epidemic did stop.

City Health Officer Dudley A. Reekie pointed out also that he noted a striking decrease in the incidence of morbidity and mortality from diarrhea, especially in children under two years of age. He is not prepared to put the blame on the fly; he is only thankful that this occurred.

Of the greatest importance was the fine cooperation that the public gave the board of health in this campaign. Dr. Nixon points out that everyone was eager to know what was expected of him as an individual. Without the close cooperation of the newspapers and radio stations this would have been impossible, he declares. Newspapers paraded many health hazards that beset San Antonio—deplorable garbage dumps, leaking and inadequate sewers, dirty alleys, open garbage cans, and squalid housing conditions. Without being unduly alarmed, although given all the facts, the people were kept informed as well as instructed.

Health Benefits Expected

"In the future," says Dr. Nixon, "with such support as this from the combined press of San Antonio, unprecedented and unpredictable health benefits will accrue to this city. We can expect control over tuberculosis, infant diarrhea, and other preventable disease, and we will shrink in shame and indignation at the squalor of our corrals. And all of us would agree on an adequate sewer system for San Antonio and her neighbors."

Clinically the experience of San Antonio was not convincing. An expert investigator can find many inconsistencies that would discredit any claim that the fly, water, or even direct contact was a factor in the epidemic. But from a civic standpoint, from the point of view of a community determined to do all in its power to stamp out the scourge, it is heartening. The discipline required to prevent the congregation of children, the prompt action in more thoroughly chlorinating the water supply, the spectacular and effective action of the TIFA foggers in cutting down the fly and insect population, all point to a city determined to protect its people by whatever measures it can.

Future Policy

What would San Antonio do if faced with this same sort of problem again? R. L. Marvel, chief environmental sanitarian, answered this recently in a letter to Dr. W. E. Buck, chief of the department of public health in Pueblo, Colo. He said that under similar circumstances the city would concentrate on city-wide fogging operations, using the city-owned TIFA fogger, and would make special efforts toward the control of garbage and the larvaciding of pit toilets.

The fogging machine played a somewhat spectacular role in the city's activities along this line. Two or three weeks after the polio campaign began, the Todd Ship Building Corporation of New York City, manufacturers of the fogging equipment, made one of the machines available. The machine blankets an area with about 5% DDT fog in a kerosene solution. While the residual thus created is not heavy, Mr. Marvel states that it does have some lasting effects, and has the redeeming feature of being mobile and rapid in coverage. The city subsquently bought it.

"The machine resulted in a remarkable reduction in the number of flies," Mr. Marvel states. "While flies are not 100% eliminated, they are rendered very scarce. It is our belief that the rather wholesale elimination of insects such as flies and mosquitoes not only aided in the campaign towards polio control, but it has also reflected a reduction in the number of cases of infant diarrhea. We have also experienced—at least up to this date—a reduction in the incidence of typhus; but we cannot be so definitely assured that our current campaign against polio had been reflected in our trouble with typhus."

A Real Estate Appraiser Predicts

SEVERAL bold predictions were made by Robert H. Armstrong of New York at the conference in Atlantic City last month of the American Institue of Real Estate Appraisers. They included:

1. Dwelling prices will fall 20% to 30% in the next twenty-four to thirty-six months.
2. More than 95% of housing construction will be in one and two-family houses. The smaller apartment house is undoubtedly on the way out and will be supplanted by large housing projects which our financial institutions will own, manage, and operate.
3. Office building occupancy will continue to be high for quite a few years, although the demand will not be high enough to justify the construction of new office buildings for at least five years more.
4. Decentralization will continue, both of business and residential population. The trend of the last four years will be reversed.
5. Real estate taxes are going to go up—and fast. We shall have to make room for this factor in any net income projections that are made.
6. In less than a decade our over-all real estate picture, barring war, whether it be a military or economic war, will exhibit greater health than it has enjoyed for more than two decades.

Medical Center of Future Wins Red Cross Prize

A MASTER model of a "Metropolitan Medical Center of Tomorrow" won first place in the "Eye to the Future" contest, sponsored recently by the American Red Cross Hospital Service, and which was open to all U. S. hospital personnel and patients in Japan. Imagination was the sole requirement for the contest, but a number of the entries were sent to the Surgeon General's Office in Washington, D. C., for study with a view to their possible practical use.

Some of the features of the futuristic medical center—which won for Captain Ernest Graves, Jr., a young West Point engineer officer, and Sgt. William Kerlin a much-coveted trip to Shanghai—were the following novel proposals:

An atomic energy power plant which would house the necessary apparatus to produce from fissionable materials electricity for heating and lighting the entire medical center.

A general hospital with a roof equipped to accommodate helicopters landing with emergency cases. This building would have a central tower of thirty stories and two wings eighteen stories in height. The first three stories would house the larger rooms of the hospital, including central dining rooms and an auditorium.

A thirteen - story isolation hospital whose interior arrangement would include mechanisms for sterilization of entire rooms, and which, like the major buildings of the center, would be connected with the general hospital by underground ramps and small underground cable cars.

A mental hospital built in the shape of a cross, with wards in each wing and the attendants' area in the central portion, so that patients may be under constant observation with a minimum number of attendants.

An airport, with three medium-sized runways, used primarily for out-of-town and emergency hospital cases, but connected with the main city airport by shuttle plane service for the staff of the medical center.

A preventive medicine center, or public health center, with a large, central, circular hall in which are displayed preventive medicine and public health exhibits.

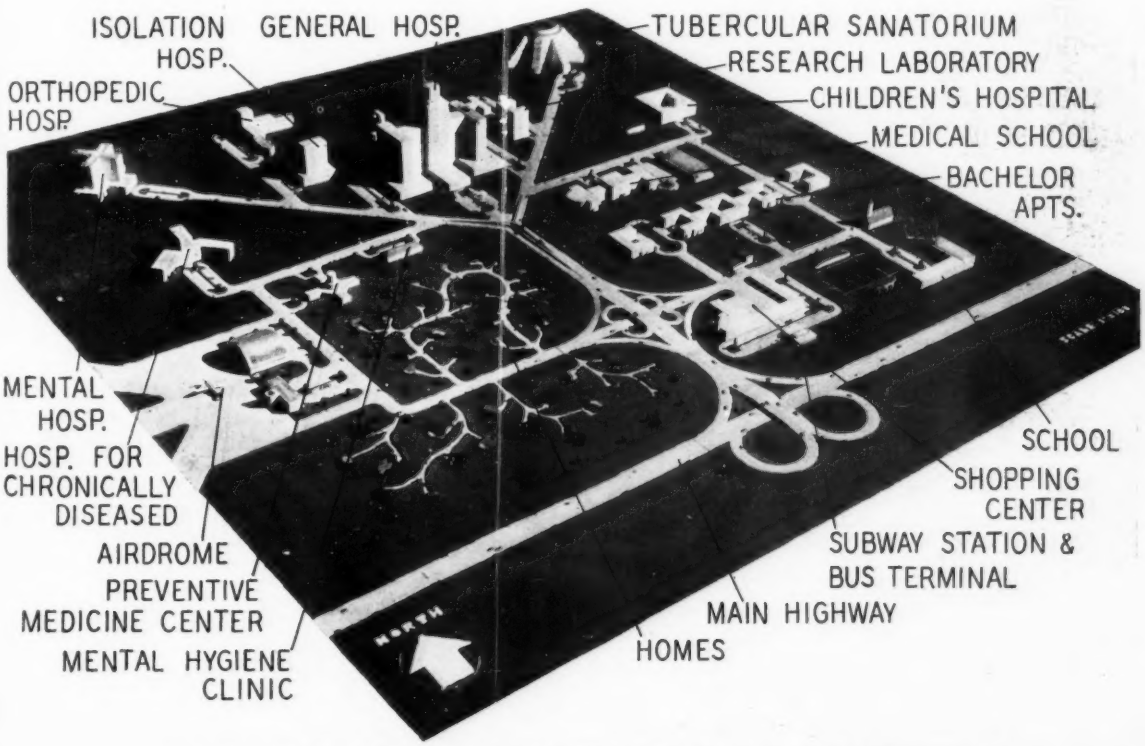
A subway station and bus terminal, the only above-ground evidence of a complete railway feeding into the medical center. The principle underground spur would lead from the vicinity of the station to the atomic energy power plant, with sidings for unloading supplies under the general hospital.

A New Sound Film, "Building America's Houses"

SMALL - SCALE building, handicraft methods, and lack of organization in the housing industry are mainly responsible for keeping costs high, according to a new 16-mm sound film, *Building America's Houses*, produced by the Twentieth Century Fund and Encyclopaedia Britannica Films. The film is intended for use by a wide range of educational organizations, business groups, civic organizations, and labor groups.

The film describes how prefabrication, large-scale building, and site fabrication can help solve the problem, with vivid shots of these processes.

Building America's Houses will be available for sale from Encyclopaedia Britannica Films in Chicago and for rental from various film libraries at nominal fees.



First prize in the Red Cross contest was this "Metropolitan Medical Center of Tomorrow."

Moderation in Paving Design

The Washington, D. C., street paving program is not bound by out-of-date tradition; yet, neither does it use extreme procedures.

NOT LONG ago a prominent lawyer in Washington asked whether there were liberal and conservative viewpoints in road and street construction. We told him that we thought there were. To define generally, a liberal policy has less precedent back of it than does a conservative policy.

Thus, according to this definition, one should be able to term the relatively joint-free street paving program of C. L. Wartelle, at Seattle, Wash., as "liberal." The thin-sectioned slab built by City Engineer Fred Storrer at Dearborn, Mich., and that built by Bill Liddle at Wyandotte, Mich., might also be included in this same category. Too, one might consider as "liberal" these engineers' scanty use of reinforcing steel and their unique notched-out curb, built so that the sidewalk can

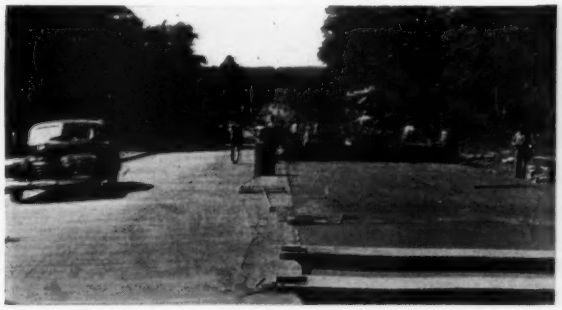
1 Subgrade construction with the assistance of a diesel-powered Caterpillar grader. One side has been paved and open for limited traffic.

2 In the batching plant the Blaw-Knox bin has compartments for three separations of aggregate, fed to the bins by a Koehring crane.

3 The trucks bring the aggregate to the mixer. If the subgrade "roughs" under the action of these trucks, the soil is replaced.

4 The contractors used sack cement rather than set up a bin for handling the cement in bulk. The Dow-Weld bar assembly spaces joints.

5 The concrete is being placed. Mesh reinforcing is placed by two-course method and will wind up 1½ inches below the surface.



6 After the finishing machine has made its pass, the finishers step in to take out any final irregularities that may appear.

slide over the notch and not break it away. Conversely, one might term the carefully reinforced slab with its 8 to 10 inches of depth and joints placed every 30 feet at Memphis, Tenn., and Houston, Texas, as conservative. It can be termed such without depreciating in the least the quality of the work or the judgment of the engineers. Both types, if well constructed, should give the public ample return for its money. The so-called liberal construction should be less expensive in first cost, but the assurance of a low maintenance cost is greater in the conservative construction.

Reasoning in this manner, one might term the recently constructed paving in Washington, D. C., as midway between liberal and conservative. Taking the common terminology of liberal being left and conservative right, then Washington's engineers tend to be in the center.

Let us consider briefly three repesentative projects built last summer in our nation's capital. None is long, when one considers paving projects in general. The three together total less than three miles. One covers paving on historic Massachusetts Avenue and extends from Nebraska Street to the District line for a distance of 0.98 miles. Another goes down Dale Carlia Parkway for 0.98 miles, and the third covers paving on Taylor Street, Bunker Hill Road, and Randolph Street for 0.94 miles. The first two are designed in parkway style with a median strip.

Let us consider first the subgrade. Paving today requires a good base. At one time engineers felt that they could cure all their paving ills by thickening the slab and ignoring the subgrade. Gradually, however, investigators began to recognize that the character of the soil had much to do with its load-bearing ability, and from this discovery came progressive, specifications covering compaction. Now, practically all specifications cover this in some way or another, but the Washington specifications carry it to a somewhat finer degree than do the others. One general specification calls for all fill material to be rolled to within 95% of its maximum density when tested by the Proctor Method under optimum moisture contents.

Washington refines it to recognize that the heavier densities are more difficult to attain and consequently calls for subgrades to be rolled within the following limits:

Maximum Density Lbs. Per Cu. Ft.	Percent Compaction Required
90 to 99.9	100
100 to 119.9	95
120 and above	90

Regarding the concrete itself, Washington engineers have not as yet adopted the use of air-entraining cement. On that score, one might say that they are conservative; however, their refusal to use it does not mean that they condemn it generally. Washington winters are far from rigorous, insofar as extremes in temperatures are concerned; salt is not used to any great extent for ice removal work; and air-entraining cement does not make quite as strong a concrete as the normal portland cement, as even its most enthusiastic backer admits. Consequently, one cannot fairly label their opinions as purely conservative.

Regarding reinforcing, Washington engineers simply do not hold to the theory that an unreinforced slab will serve, even though wartime exigencies forced the practices in many cases. Reinforcing is primarily for the purpose of absorbing temperature stresses which occur often in the average pavement, which has one side exposed to the heat of the sun and the other to the dampness of the earth. Another value of reinforcing is to distribute the shrinking stresses which occur during the hardening of the concrete. On 8-inch slabs, the specifications call for 50-pound per 100 square foot mesh with 6-inch open spacings. The mesh in this case consisted of 6-gage in a longitudinal direction and 4-gage transversely. Their action may be conservative, Washington engineers admit; but, on the other hand, it may be more accurate to say that they give thorough consideration to all engineering factors involved.

Mix Used by Washington Engineers

Insofar as the concrete proportions are concerned, Washington engineers use a mix that is neither radical nor conservative. The mix is designed on the following basis for a cubic yard batch:

Content	six sacks
Sand	1,066 lbs.
2" to 1"	1,270 lbs.
1" to #4	834 lbs.

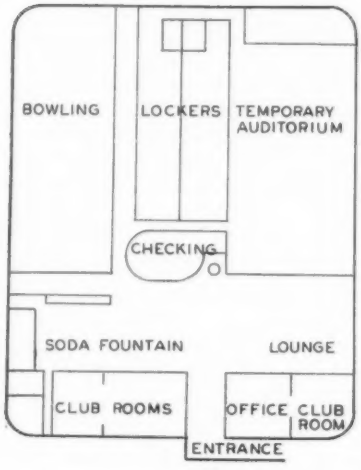
Water-cement ratio 5¾ gallons per bag.

This mix is cured by sprinkling for twenty-four hours, and then it has a surface treatment of calcium chloride. It is opened for traffic when the beam test shows 450 pounds per square inch. This usually takes from three to four days. It it is important to open a pavement promptly, as at intersections, an additional bag of cement per cubic yard is used, together with an accelerator. This mix generally provides satisfactory opening strength in twenty-four hours.

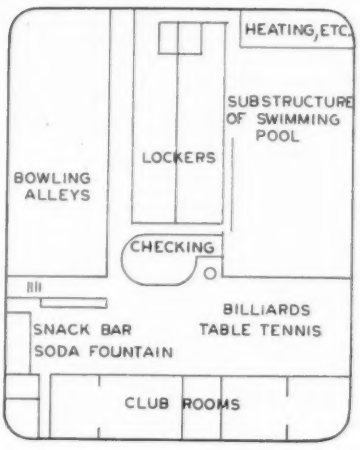
The use of joints constitutes another point over which engineers disagree. Washington specifications call for a ½-inch expansion joint every 30 feet, or a ¼-inch expansion joint, if satisfactory rigidity is provided. And when one considers that many engineers are quite ready to abandon the use of expansion joints entirely, this appears, on the surface, to be rather slow acceptance of what is generally considered good practice. Actually, this is not the case. The Washington specifications have practical rather than theoretical considerations in back of them. Most city streets in a metropolitan area like Washington are filled with catch basins, manholes, and other rigid points that jut into the paving slab. Good design requires special treatment around them, and their existence complicates any schedule of expansion and contraction joints such as can be used on highway construction. Consequently, a 30-foot interval with a ¼-inch joint seems a good compromise. All joints are strengthened with load-transfer dowels placed at 1-foot intervals.

And so the record stands, Washington's paving neither liberally incorporates untried engineering theories nor does it conservatively reject new ideas. Like the careful voter, or the careful legislator, it sticks to the center of the road.

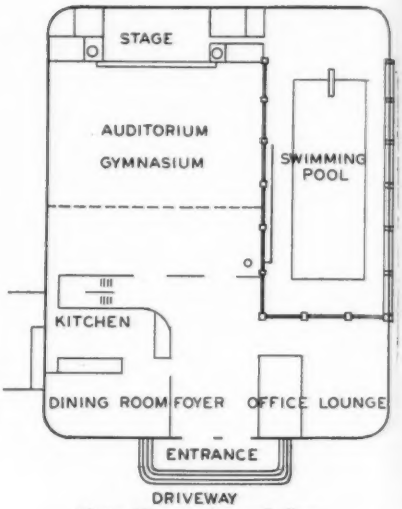
7 **To cure the concrete, the specifications call for wet burlap for 24 hours and calcium chloride thereafter. The paving will be open for traffic in three to four days.**



Temporary Basement—First Step



Basement—Second Step



Main Floor—Second Step

A Recreation Center That Grows

A description is given of a recreation center that grows as funds are available. A temporary basement may be the first step. Then other floors are added gradually as the budget permits. Thus a recreation center may be provided for veterans and teen-agers.

By HUGO W. WOLTER*

WHAT can the smaller communities provide for the entertainment of veterans and teen-agers? What can be done for the confused youth—wealthy and poor alike—whose tendency to delinquency asserts itself around the age of seventeen? What can be done for the older person who is tired of sitting at home?

Thousands of dollars are wasted in attempts to answer these questions—wasted on impractical projects conceived by sincere but untrained minds.

The community with the smaller pocketbook is here offered a method for solving some of these problems in a practical way within its own budget—a method worked out by men who have developed and organized recreation centers and programs approved and used by the United States Government in military areas and housing projects. The method is a recreation center *that grows as funds are available.* It is ideal for communities that plan a building as a living war memorial or for community activities. It adapts itself to the available space—a congested area or a large park and playground.

How does the center grow? The center grows according to the desires of the community. First is the basement. It is a complete basic unit. In it are provided such activities in which the greatest interests of the community focus—be they bowling, dancing, eating, civic functions, crafts, or agricultural exhibits and experiments.

As the budget permits, the first and second floors are added. The building is so planned that it may expand those activities which the community has demonstrated it wants expanded.

The swimming pool may be included in this second step. It is connected with the auditorium by a double glass partition, with sound-proofing, so that the audience can see the water activities when desired. The aquatic coloring and underwater lighting of the pool may also be seen from the lounge through a thermo-pane glass partition. Glass doors opening onto a sun deck or beach area provide summer and winter pleasure for both swimmers and spectators. Part of the space under the pool may be planned as a rifle range.

The income from activities on these floors provides funds for a third floor which again offers expansion opportunities for such activities as the community wants. These may be crafts, clubs or hobbies, informal or formal. Office space may be included.

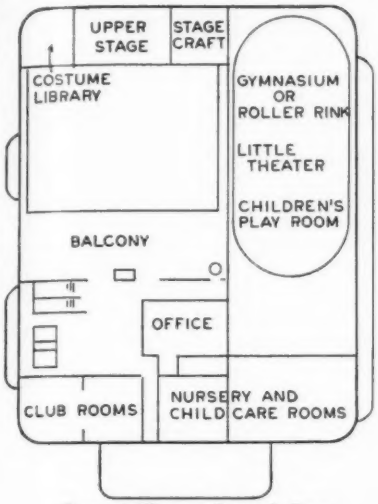
The roof is used at every stage of development. It is lined for court games. Tennis, badminton, handball and other games will be played there. Open air dances and parties promoted by the various clubs always appeal to the teen-age group. A fireplace adds a touch of romance.

Functional Design

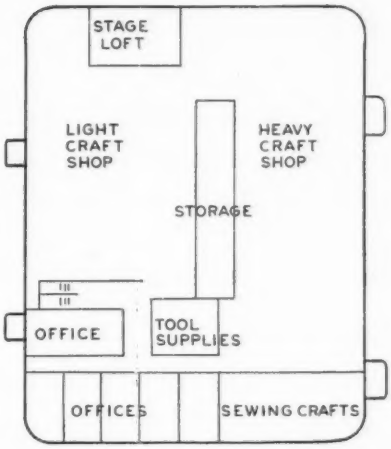
What does the building look like? Will it fit into our city? The external design suggested here is functional. Since the interior is functionally planned, the exterior shell may be colonial, mission, or any other type of architecture.

The building is designed to utilize modern methods of construction. Concrete, steel, and glass blocks are used. Provision is made for air-conditioning. No construction changes are required

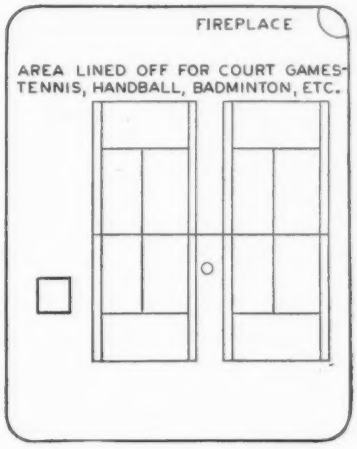
* Manager of Recreation Consultants, and consultant for United Project Engineering, 55 Liberty Street, New York 5, N. Y.



Second Floor—Second Step



Third Floor—Third Step



Roof

on any previous floors as new ones are added.

How much does this center cost? Location, topography, labor, and the type of equipment are all variable factors in cost estimates. Under present conditions the basement unit, exclusive of land and excavating, is estimated at $137,000. Because of local conditions this may be too high or too low. The figure applies to the mid-Atlantic states. It is intended only as a general estimate.

How can we pay for this center? Financing is based upon the steps in construction. Many communities have set aside or collected varying sums of money for recreation or war memorials. One-half of the original required investment is usually sufficient to get started. Local financing conditions, government or RFC loans, and private sources are factors to be considered.

The basement section can be enclosed and equipped. A good program increases the interest of the people and makes future fund-raising easier. Many people will help only after they see a building and program grow before their eyes.

Contrary to a general misconception, it is possible to have recreation centers provide not only operation costs but also to return a profit. This profit, together with donations and tax support—or any of the three alone—forms the basis for further growth.

Trained Management Essential

How can we operate our center after we have it? Trained management is unquestionably necessary. Management can be handled in one of several ways:

1. Municipal operation through an existing recreation department.

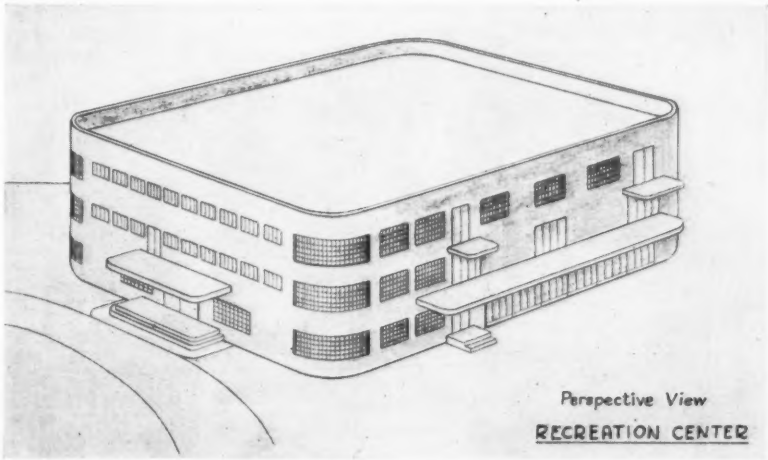
2. Operation under a manager secured by and responsible to an independent board of directors. These directors would be representatives of local civic groups, clubs, or other organizations with similar local interests.

3. Operation under a skilled and experienced recreation management firm on a direct fee or a percentage basis. This firm would report to the local government or to the independent board.

If municipal operation or a single manager is decided upon, it is advisable that an experienced consultant and management organization be retained during the period of construction and for two or three years of operation. In this way the local personnel is assisted in developing successful operation. There is no substitute for experience. Such a group can greatly assist the manager in caring for local pressure groups whose specialized interests might warp the general development of activities.

What results can be expected? The building is so arranged that a very flexible program is possible. The main criteria are the desires of the people. This center aims at "family recreation." Parents come and bring their children of every age. Child care rooms eliminate the "sitter" problem. The club rooms and soda fountain attract the teen-agers. Older people can participate or just sit and watch. Good companionship—the best guide for youth—is made easy. With the cooperation of the public library, civic bodies, boys' and girls' organizations, and other community groups, hobby, club classes and special interest outlets are provided.

The community gains socially, morally, and economically. Each group finds an outlet for its interests. Family life is strengthened, community spirit is promoted, and the problems of veterans, teen-agers, children, and parents are alleviated.

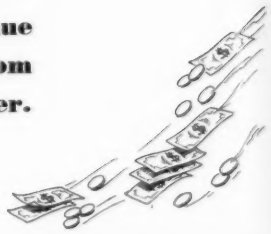


Functional Perspective

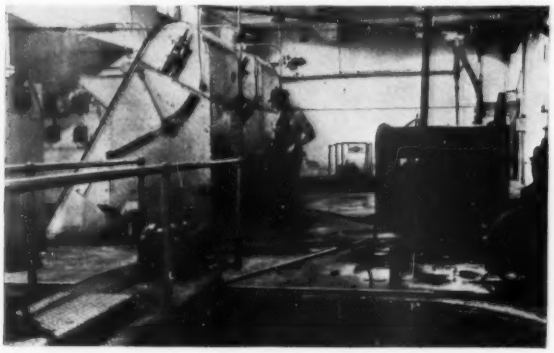
Sewage Treatment Dividends

Des Moines, Iowa, produces as much revenue as possible from its sewage before turning it from the treatment plant to the Des Moines River.

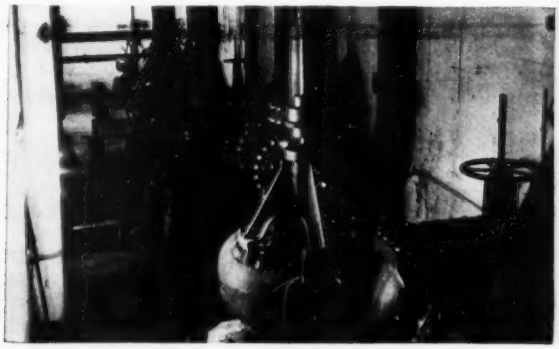
By WILLIAM S. FOSTER, *Engineering Editor*



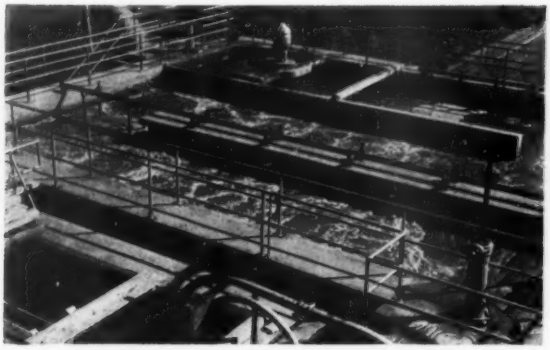
Des Moines Treatment Plant in Pictures



1 Two Triturators condition the sewage screenings and Detritors remove heavy inorganic material.



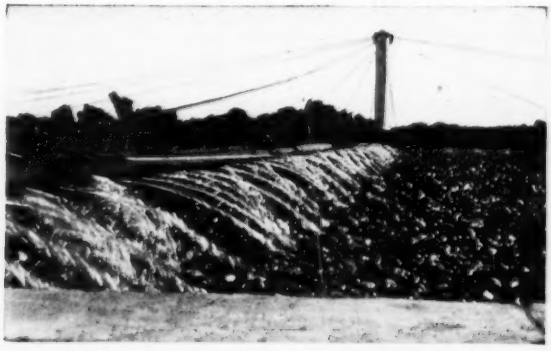
2 Next, Worthington vertical pumps lift the sewage to the other portions of the plant.



3 The sewage gets a bit of pre-treatment here from an American Well Works aeration tank.

4 The sewage is then received by a set of four Link-Belt clarifiers for primary settling.

5 The sewage then goes to a set of trickling filters with about five acres of filter area.



6 The filters in action. After final settling, the treated sewage is discharged in the river.

SUPERINTENDENT Paul Winfrey has three money-producing projects in his sewage treatment plant: the sale of skimmed grease, the exchange of sludge gas for power, and the sale of sludge for a fertilizer base. The only things for which he hasn't been able to find a market are the inorganic grit and the purified effluent.

The plant has an interesting background. Built and put into operation in 1940, it was constructed to relieve pollution conditions on the Des Moines River that had become so bad that towns downstream became rebellious. Horace Brown, water works superintendent at Ottumwa, Iowa, one of the downstream points, in desperation tried large doses of chlorine in order to contral the nauseating tastes and odors that resulted from the use of the river water. The result of his desperate experiments was the "breakpoint" chlorination procedure.

The plant was designed by City Engineer John M. Tippee, formerly an engineer with the Federal Government on Chicago Sanitary District Work. The plant is of conventional design, using plain sedimentation with separate sludge digestion and trickling filters to treat the settled effluent. It has a hydraulic capacity of 20 mgd and can provide between 90% and 95% purification under these conditions.

The sewage enters the plant through a 6½-foot by 7-foot gravity main and passes through either of two Link-Belt Triturator screens into a Dorr Detritor for grit removal. Next, a battery of Worthington pumps equipped with Iowa gate and check valves lifts the sewage to the aeration tank, where grease is skimmed off and subsequently sold. The sewage then goes to a set of four Link-Belt primary settling tanks, each 90 feet in diameter and 11 feet deep. Sludge from these tanks goes to a set of four digesters, each 80 feet deep, all equipped with PFT floating covers, three of metal to facilitate gas collection. The digested sludge goes onto fourteen drying beds for dewatering.

The effluent from the primary tanks goes to a set of twelve rotary trickling filters totalling five acres of filter area. These filters, equipped with PFT distributors, are 152 feet in diameter and have a capacity of 4 mg per acre per day. The sewage then goes from the final tanks and is discharged into the river.

Of the various money-making features of the plant, the one that was designed into it from the start was the gas collection feature, although it does not utilize any gas engine equipment. The plant sells the gas to the local utility and in turn buys electric power for pumping and other uses. The gas is sold at the rate of 2½ cents per therm during the seven warm months and 3½ cents for the balance of the year. The plant then purchases power at the rate of one cent per kwhr. The sale of the gas more than offsets the cost of the power.

On a per capita basis, the production of gas from Des Moines sewage is heavy, reaching 3 cubic feet per capita on a straight population basis. However, when analyzing the packing house sewage and other industrial wastes that enter the mains, one can raise the Des Moines population from a nominal figure of 160,000 to an equivalent of 400,000, which would reduce the gas production figure to 1½ cubic feet per capita. The production is 10 or 11 cubic feet per pound of volatile solids.

The digesters use an American Gas Products boiler to keep the temperature at 90° F., for optimum digstion. A 4½-inch Pittsburgh Equitable gas meter measures the gas to the boiler. A PFT flame trap protects the line from explosion hazards.

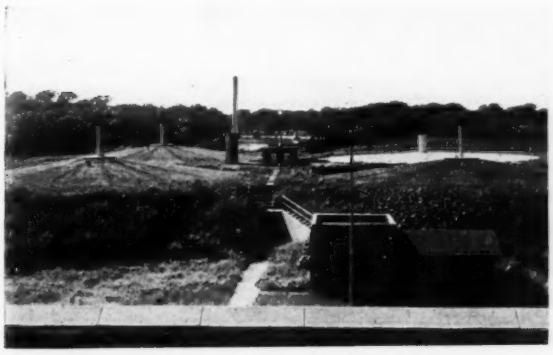
Although the tanks are at present heated by a set of wrought iron coils, City Engineer Tippee is laying plans for replacing these with a set of heat exchangers. He hopes to see additional digestion capacity supplied, which will result in even better gas production.

The capitalization on the skimmed grease came about rather peculiarly. Superintendent Winfrey tried originally to interest the city council in the possibilities of this salvage operation and failed. He collected some of the grease, rendered it at the plant, and sold it to a local concern under his own name. He then showed the check to the council as more concrete evidence of the profit in this operation. Before the council had acted and drawn a contract with a company interested in the product, Superintendent Winfrey had made several more sales that enabled him to purchase a kitchen cabinet, tables, and stove for the men at the plant to prepare meals.

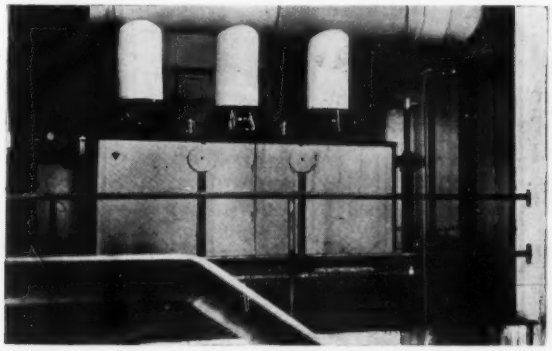
The grease sales now amount to approximately $2,500 annually, with a selling price of 1¼ cents per pound. The skimming entails no extra work.

The sale of the dried sludge is the most recent of developments at the plant. Previously, the plant gave away this sludge, but only a short time ago the council entered into a contract with The Soiltone Co., Lincoln, Nebr., that offered to pay $2.00 per ton on a dry weight basis for the privilege of drying, grinding, and sacking the sludge. According to the terms of the contract, The Soiltone Co. is to pay the city a guaranteed sum of $10,000 per year for the sludge plus $3.00 per ton for all sludge over 5,000 tons per year.

The operation of the plant is financed through sewer service charges based on 10% of the water bill and collected by the water department. This charge more than meets the operating costs; the balance earned from these three sources is a dividend to help defray the city's investments. The cost of treating the sewage based on operating charges alone is slightly less than $13.00 per million gallons treated.



7 Gas generated in these four digesters is exchanged with the electric utility for power.



8 To keep the digestion at an optimum temperature, the plant uses this gas-fired boiler.

Redevelopment Plan for Cincinnati's Blighted Riverfront

CINCINNATI'S blighted waterfront on the Ohio River, in early days the very heart of the city's activities and for many more recent years an economic problem of the first order, has now been attacked by the city's Master Planning Division under the direction of Sherwood L. Reeder, Director of Master Planning; and a solution has been proposed.

A bold and comprehensive redevelopment plan covering that portion of the riverfront which flanks the downtown business district has just been approved and adopted by the City Planning Commission.

The backbone of the plan is the apex of two new expressways — one from Toledo and the other from Cleveland —entering the city from the north and the northeast, proceeding through the outskirts, then joining on the south border of the central business district in what has been designated as the "expressway distributor." They will continue across the Ohio River into Kentucky as a single route. The city of Cincinnati and the state of Ohio are now in process of negotiation as to the route of the first of these expressways through the city proper.

Already one of the individual projects of the plan—the exposition hall-arena—has caught the imagination of local investors who are interested in the possibilities of the riverfront location.

"The realization of our riverfront redevelopment plan cannot take place overnight," says Mr. Reeder. "The entire project can, however, be achieved unit by unit over a period of years. The moves already made, and the enthusiastic reception given the plan by the public and the private interests chiefly affected, demonstrate that it is practical and economic, while at the same time truly magnificent in scope and conception. It can be realized and we believe it will."

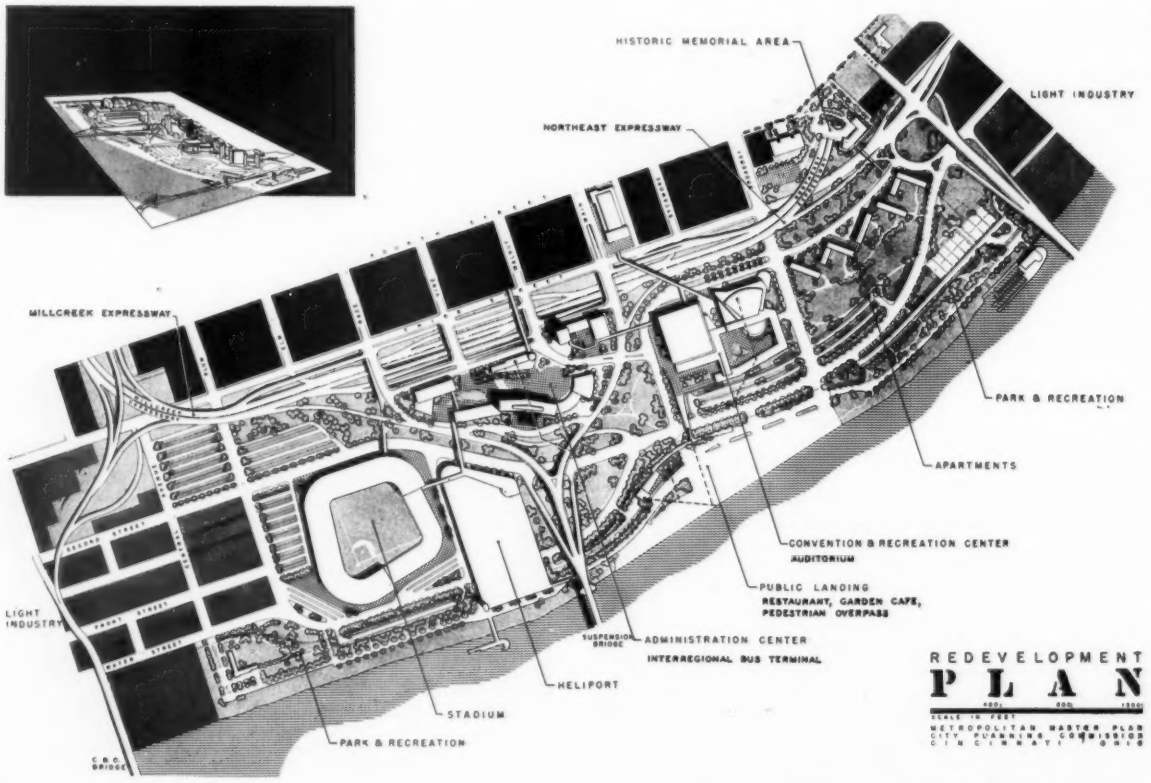
Floods have contributed greatly to the obsolescence of Cincinnati's riverfront. The historic flood of 1937, when the Ohio reached an all-time high of 79.9 feet, completely inundated the territory involved in the new plan.

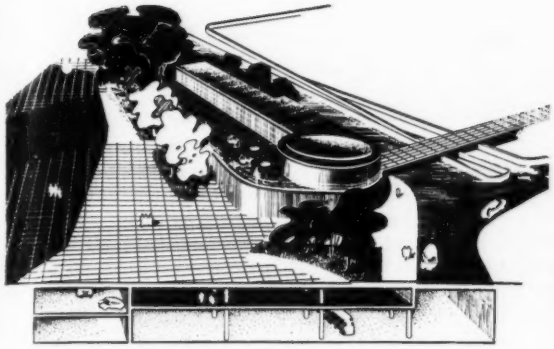
Through what may be termed "selective protection," the plan both prevents flood damage and effects reclamation of the area. Selective protection, which would eliminate the flood hazard for most of the area, will be provided by structural design, earth fill, and the location of the units. The only unprotected areas would be those such as parking lots and other open spaces which would not be damaged by occasional inundation.

Freed from the rectangular street gridiron of the present riverfront, the design attains a flexibility which makes possible a pleasing transition from the formal pattern of the downtown business district to the openness of the river's expanse.

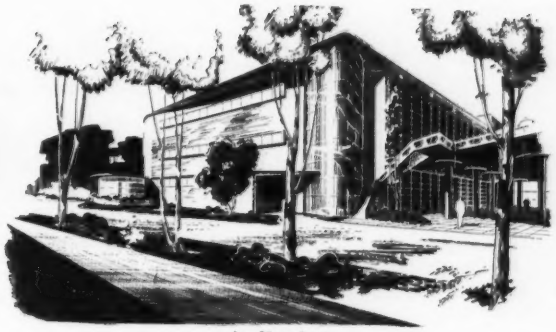
Expressway System

The area forms the logical meeting point of all the main traffic arteries of the city and logical terminal for its motor traffic. It is potentially the most accessible spot in the entire metropoli-



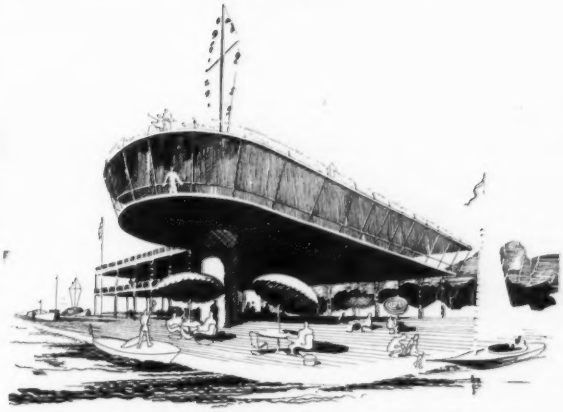


Inter-regional bus terminal



Auditorium

Public landing



Floating boat harbor for small craft

tan area and adjacent to the most highly developed portion of the business district, as it occupies the entire space between the latter and the river. In short, it lies close to the focal point of the city's life.

Accordingly, the expressway system of the metropolitan area, as proposed in the Master Plan and as part of the state and national network of inter-regional highways, makes this the main junction and interchange point for motorways.

The depressed "expressway distributor"—which, between the business district and the riverfront section, collects and distributes traffic from and to all parts of the downtown area and across the river—forms, along with its expressway and highway connections, the backbone of the riverfront design. Vehicular traffic serving units included in the plan flows around each group.

Large areas and structures for parking approximately 9,000 cars are located for maximum utility to serve units in the plan and the adjacent business district. The inter-regional bus terminal is logically placed here also.

Blocks reserved for light industry at each end of the plan act as buffers between the redevelopment and adjoining present industry which, under the plan, will not be disturbed.

In early years most of Cincinnati's population lived in this area. As evidenced by the popularity of several high-class apartment buildings now on its fringe, there is still a demand for housing near the business district. The plan shows a number of apartments so grouped as to secure the maximum advantages of sunlight, prevailing breezes, and river view.

High on the list of Cincinnati's needs are accommodations for events that bring together large numbers of people. With all the advantages of accessibility, good shopping districts, hotels, and entertainment, it lacks an auditorium and exposition hall and arena of appropriate capacities, design, and facilities.

The plan provides a Convention and Recreation Center which will include these needed buildings as well as an entrance plaza, a stadium for outdoor spectacles and sports, and an industrial display building with a merchandise mart on its upper floor.

The auditorium, with its impressive setting and attractive surroundings, will be the future home of the Cincinnati Symphony Orchestra and the Cincinnati Summer Opera. Through the use of movable exterior wall sections, summer functions may be staged here in the open air.

The exposition hall-arena and the auditorium form a unit to meet ideally the needs of conventions and will provide an indoor setting for sports, ice shows, hockey, and many other entertainments.

The Administration Center in the plan provides a grouping of appropriate buildings to form a convenient, efficient, and impressive center for governmental activities.

A municipal administration building or city hall, state offices, a health and welfare headquarters building, safety and courts buildings, and an organizations building for the use of associations of the city, are all provided in this group.

Water-side parks and recreation spots are universally popular; yet along its miles of frontage on the "Beautiful Ohio," Cincinnati has only a few acres devoted to these uses. Under the plan, the open expanse of the river's surface becomes practically and esthetically an integral part of the scene. A portion of the bank is developed as a park with a promenade and pedestrian paths where cooling breezes may be enjoyed.

Here, too, are provided in ideal locations a shelter house, a floating harbor for small pleasure craft, a helioport landing deck with a terminal building and control tower, a regatta base, a riverview restaurant and garden cafe, tennis courts, playgrounds and picnic areas, and spaces for appropriate concessions.

THREE-Layer Pavement

By J. M. LACKEY
Senior Highway Engineer
California Division of Highways

THE rapid growth of population and the housing boom in southern California is fast converting many state highways virtually into city streets. One such road is Rosemead-Lakewood Boulevard, a north-and-south highway immediately to the east of the Los Angeles city proper. Eleven years ago, when this improvement was first started, the entire area traversed was strictly rural. Unpredictably heavy traffic increases required further facilities in the next few years; and, more recently, the still greater increases in traffic occasioned by war plants, housing projects, and general development have made it necessary to add to the capacity of some sections a second time.

The most recent unit of this highway to be improved is the northernmost section between Huntington Drive and Colorado Street, bordering the cities of San Marino and Pasadena on the east. Designed to meet the needs of constantly increasing traffic, the most up-to-date pavement types and methods were used in planning and construction.

A traffic count on Rosemead-Lakewood Boulevard, taken in July 1946, showed over 10,000 cars daily in each direction passing through construction on two lanes restricted for the use of traffic. Since the completion of the project, the traffic has doubled. On other portions of this route the daily traffic averages in excess of 27,000 vehicles in each direction, the maximum count being 36,577, taken at the southern terminus. Commercial vehicles average 20% of the total.

The roadway design employs two 32-foot roadways divided by a 28-foot parkway strip within a 110-foot right of way. An additional 12-foot lane in each roadway can be provided by reducing the width of the center dividing strip when necessity arises.

Building the Sub-Base

Following the construction of curbs, the two 31-foot roadbed areas to be paved left and right were graded and compacted to true subgrade elevation by watering and rolling with a 12-ton, 3-wheel Buffalo-Springfield roller. A Caterpillar patrol grader scarified the native soil to a depth of 4 inches and bladed the material into two equal windrows of approximately 6 cubic feet per lineal foot for each of the 31-foot roadways. Cement at the rate of 5.37% by weight was then evenly spread on each windrow and the material mixed by a single pass of a Wood pug-mill type road mixer pulled by a RD8 Caterpillar tractor, the pug mill on the mixer being operated by a shaft connected to the power take-off on the tractor.

The Wood mixer was equipped with a centrifugal pump which pumped water from a 2,500-gallon water tank truck, traveling alongside and sending water into the mixer with spray nozzles mounted inside the mixer drum. An average of 10% of water was used in the mixed material.

The material was mixed in the two windrows in 400- to 500-foot lengths, laid down with the 12-foot blade of the Caterpillar grader, and rolled with a 12-ton Buffalo-Springfield roller and finished with a 6-ton rubber-tired roller. The finished surface was given a cure coat of 150-200 penetration asphalt emulsion at the rate of 0.16 of a gallon per square yard.

Relative compaction tests on this material ran from 91.4% to 94.3% of the density at optimum moisture conditions with an average of 92.5%.

Considerable difficulty was encountered in complying with the clause of the special provisions to the contract, requiring the road-mix material to be compacted within 1½ hours from the time water was applied to the mixture. An effort was made to shape and roll one windrow while mixing the second windrow. Curbs on each side prevented cutting off high spots and blading excess material to the side. This haste in starting compacting operations resulted in a surface on the sub-base that was not entirely smooth.

A compaction test made on a sample of sub-base material, at intervals of 30 minutes, 1 hour, 2 hours, and 3 hours after the application of water, using the 30-minute compaction (94% relative compaction) as 100%, showed the following results: 1 hour—98.6%; 2 hours

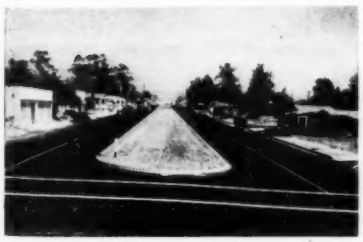
Rosemead Boulevard under construction. This state highway, close to the rapidly growing cities of San Marino and Pasadena, is constructed as a city street to meet conditions certain to prevail in the future.

Close-up of cement-treating operations. Four inches of native soil have been bladed in windrows and cement in the amount of 5⅓ by weight added. Water is added through the mixer in measured volume.

Future needs were considered in the construction of a boulevard subject to very heavy traffic near Pasadena, Calif.

The cement-treated courses are topped with 4 inches of asphaltic concrete.

Completed boulevard near the north end. Grass will be in the center.



View near the center of project. Some two dozen buildings have been built.

—97.7%; and 3 hours—97.3%.

Reduced to terms of relative compaction: 30 minutes—94%; 1 hour—92.7%; 2 hours—91.9%; 3 hours—91.5%.

The results of this test appear to justify more care in shaping a mixture before starting compacting operations.

Plant-Mixed Base

Cement-treated base (plant-mixed), in accordance with the standard specifications and the special provisions for this project, was processed through a local asphalt plant and hauled approximately six miles to the job in asphalt dump trucks. The material was laid without any difficulty in one compacted 4-inch course with a Barber-Greene asphalt finishing machine, rolled with a 12-ton Buffalo-Springfield roller, and finished with a rubber-tired roller.

In laying the cement-treated base, every effort was made to overcome any roughness of the sub-base. Grades were marked ahead of the finishing machine at three points across the 31 feet of pavement at 50-foot intervals, and the screed of the finishing machine was adjusted to meet the theoretical grade of the plant-mix surfacing as closely as possible. This reduced but by no means eliminated the extreme roughness of the sub-base. Immediately following the compaction of the plant-mixed base, a curing seal of 150-200 penetration asphalt emulsion was applied at the rate of 0.05 of a gallon per square yard.

Cement at the rate of 6.43% by weight was used in the cement-treated base. The average moisture content was 5.1%. The mineral aggregate met the following specifications:

Passing	1-inch sieve	100%
"	¾-inch "	90-100%
"	#4 "	40-75%
"	#30 "	15-40%
"	#200 "	3-15%

Asphalt Concrete Pavement

Asphalt concrete 4 inches in thickness, consisting of 2-inch level course and 2-inch surface course, was laid 31 feet wide, left and right, between central dividing curbs and 1-foot concrete gutters with a Barber-Greene finishing machine.

Central street openings, amounting to 13,038 square feet, and 4 inches in thickness, were laid in two courses by truck spreading and hand raking.

Side street approaches, amounting to 20,623 square feet, and 3 inches in thickness, were surfaced by truck spreading and hand raking.

Compaction on all courses was obtained with a 12-ton, 3-axle tandem and a 10-ton tandem. The finished surface was given a final rolling the day following. Seal coat was applied at the rate of .05 of a gallon per square yard.

An effort was made still further to eliminate the roughness carried through the plant-mix course from the sub-base by marking a theoretical level course

(*Continued on page* 103)

Close-up of construction operations. On the right and left roadways the native soil has been cement-treated in place and seal-coated with asphaltic emulsion. The old pavement in the center carries traffic.

The mixture is completed, spread, and rolled to the correct section and covered with an asphaltic emulsion seal. The next course will be a 4-inch layer of cement-treated material mixed in an asphalt plant.

New Satellite Town of 25,000 Planned

A city will arise on the rolling Illinois countryside 30 miles south of Chicago Loop

By PHILIP M. KLUTZNICK
President, American Community Builders, Inc.
Chicago, Ill.

TODAY, a motorist driving on the Lincoln Highway south of Chicago sees nothing but rolling Illinois hillside. In two and a half years, American Community Builders, Inc., hopes he will see a city of 25,000 population which will have arisen on 2,400 acres of green hillside situated generally between the towns of Matteson and Chicago Heights, Illinois, directly south of the Lincoln Highway and thirty miles south of the Chicago Loop.

This is the site for the city on which the American Community Builders (ACB) will begin construction in the spring. General planning already is completed, and the ACB staff is now working on the detailed planning.

The object is not a suburb, but a satellite town with a firm industrial base, a town that will enable the man in the middle-income group to seek his best work opportunity without the sacrifice of his urge for healthful and wholesome living.

Utilities and Municipal Services

Our plans call for a complete and modern utility system to meet the requirements of the city. Available to all residents will be complete gas, electric, water, and telephone service. All utility services will be underground, and gas will be used for heating, cooking, and domestic water heating. There will be a complete, sanitary sewage system and an activated sludge treatment disposal plant.

The road network will include an arterial which will feed the whole town, together with adequate secondary roads to facilitate motor travel with ease and safety. Modern motor coaches will provide transportation throughout the city for a 5-cent fare, according to present plans.

Provisions for municipal services will be made prior to actual incorporation. Scheduled for the completed town is a town hall to be erected in the commercial center. It will contain record rooms, fire station, court room, police department, public health department, public works section, and post office.

Non-Nuisance Industries

To protect the basic concept of a well-planned and clean town, only non-nuisance industries will be considered in the sale or lease of land in the industrial park. The park includes 475 acres of land lying between the Michigan Central and Belt Line Railroads. The ACB is preparing a general plan for the industrial development of this area and is acting to insure the selection of the proper industries. The construction plan of selected industries will be approved by the ACB to insure architectural unity in the industrial park as well as in the rest of the city. It is anticipated that the town's industry will afford a supplementary source for the employment needs of the community. Furthermore, the introduction of proper industry will tend to stabilize the city and serve to establish a sounder tax base.

Streets and Shopping Centers

Safety has been a consideration in all planning. Dangerous and expensive streets, for example, are reduced to a minimum for the sake of safety as well as for beauty and economy. The main commercial section is planned in such a way that streets need not be crossed. Provisions for 600,000 square feet of parking space adjacent to the shopping center means that there will be no problem of traffic for the shopper. In addition, even following the expansion period, the space allotted for parking now will meet all demands adequately, thus avoiding one of the most serious problems facing almost every city in the United States today.

The shopping centers will be integrated in such a way that excessive duplication of commercial facilities, spread out and inconvenient, will be avoided. At the same time, there will be enough competition so that prices are maintained on a fair and reasonable level. There will be about 200,000 square feet of rentable space in the main shopping center, located in the heart of the city along the main flow of traffic and readily accessible both from within and from outside the city. Covered canopies will protect shoppers in all kinds of weather, and there will be a central mall where children can play in safety while their mothers shop.

"Parkblock" Residential Sections

The ACB will build for 5,500 familes initially, while reserving land for future expansion. Variations of single-house dwellings, twin houses, four-family town-and-country homes, and apartments have already been designed by the architectural staff. Calculated to meet the needs of veterans under the Veterans' Emergency Housing program, the project provides for the sale and rent of homes and apartments at a price which veterans can afford.

The residential section will be divided into five neighborhoods, each centered around a school. In addition to the elementary schools, there will be a centrally located high school. With regard to church facilities, the Church Federation of Chicago is aiding in the allocation of space.

The basic concept of planning in the residential sections is the "parkblock" with its attempt to provide a parklike atmosphere. The size of the blocks varies with the contours of the land and the design of the homes placed there. The shapes of the homes will be as varied as the sizes. From ten to forty families will be housed on a block, some of which will include garage compounds.

Architectural Design

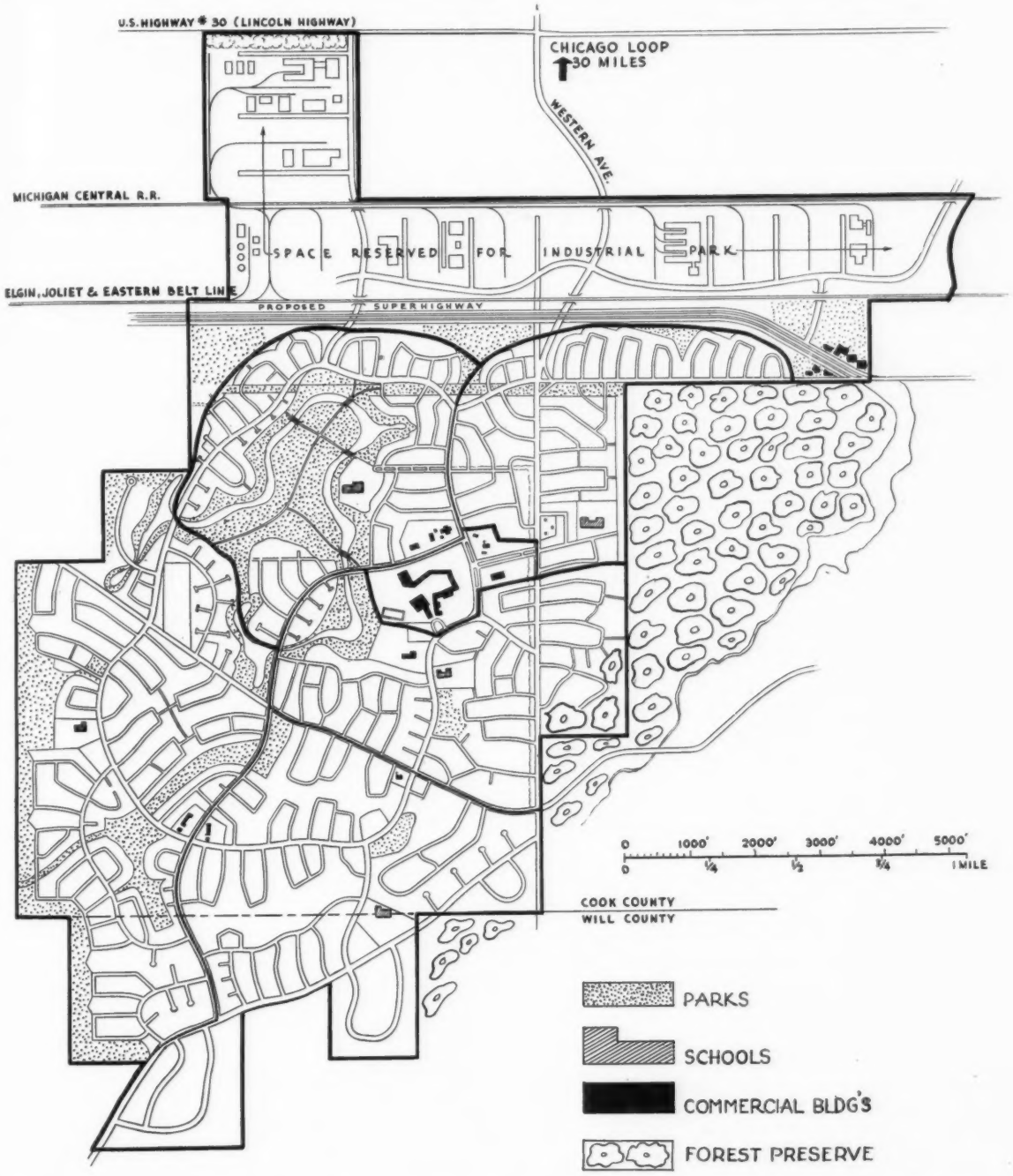
The architectural design of the dwellings will be as straightforward as possible, avoiding both traditional and modern faddishness. The search is for charm without over-sentimentality and a contemporary freshness without modernistic insistence. Economy will be found in the prefabrication of repeated elements, in the standardization of as many parts and processes of construction as possible without destroying the individuality of houses.

A false variety for variety's sake will be avoided. The difference in size of units, the concept of balanced communities in which all types of dwellings will be found, and the adaption of our plan to varying site conditions will avoid the regular, unimaginative appearance frequently ascribed to large-scale developments in middle-income housing.

Recreational relaxation will be pro-

vided by utilization of the nearby Forest Preserve and of the six hundred acres of park for which space is being saved. Moreover, a portion of the main commercial area will be devoted to amusements such as theatres, a swimming pool, bowling alleys, and the like.

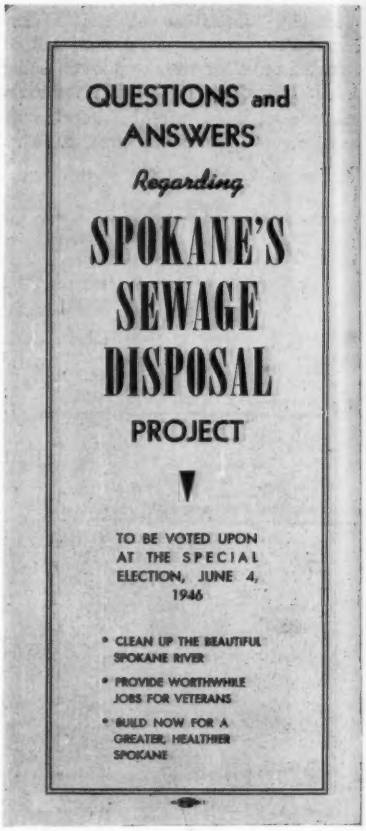
The men associated with American Community Builders, Inc., include such persons as Jerrold Loebl and Norman Schlossman, Chicago architects; Nathan Manilow and Carroll Sweet Sr., experienced builders of large scale housing developments in the middle-west; Elbert Peets, town-planner who participated in the planning of the towns of Kohler and Greendale, Wis.; Allan S. Harrison of New York, who heads the ACB construction division; and Charles Waldman, utility engineer for the entire project. They have captured the romance of building a brand-new city and are aware of the social impact that is implied.



Here is a tentative site plan for the city. It indicates the five contiguous neighborhoods into which the town is divided. There is a school in each of the neighborhoods, around which the community's cultural, athletic, and civic interests will center. In the heart of the town is the commercial section; in the main shopping center itself is space reserved for churches, libraries and semi-private buildings. That part of the plan labeled Parks includes park area proper. Green area dominates the planning of the residential section. A forest preserve borders the town on the east and somewhat south. As planning becomes more detailed—locations of various types of dwellings firmly fixed, organization of the road network determined—the site plan above will no longer be accurate. It does, however—and will—provide an insight into the character of the planning and is an authentic portrayal of town planning in an early stage.

Spokane Sells Sewage Treatment

An alert program of education in this city persuaded voters to turn out in record numbers and accept a program they had rejected four times before.


QUESTIONS and ANSWERS
Regarding
SPOKANE'S SEWAGE DISPOSAL PROJECT
TO BE VOTED UPON AT THE SPECIAL ELECTION, JUNE 4, 1946
• CLEAN UP THE BEAUTIFUL SPOKANE RIVER
• PROVIDE WORTHWHILE JOBS FOR VETERANS
• BUILD NOW FOR A GREATER, HEALTHIER SPOKANE

PINK ASCOT ties on the necks of their milk bottles greeted the housewives of Spokane on the morning of June 3rd. The women were surprised by the oblong cards, but not by what they read. The milk-bottle appendages urged them to go to the polls the next day and vote for the referendum to float a $1,700,000 bond issue to finance Spokane's new sewage treatment project. It was the final appeal in a two-month campaign that utilized every modern advertising medium to accomplish its objective—an adequate sewage treatment plant for Spokane.

For weeks prior to the election, the residents had heard the project discussed over the air and at rallies held throughout the city. They had read about it in a booklet mailed at the outset of the campaign to every city address, in every issue of the morning and evening papers, and in full-page ads as the campaign drew to a close. Thousands of Spokanites had seen dramatized the dangers of polluted waters and the benefits of modern sewage treatment in *Clean Waters*, a motion picture in color, produced by the General Electric Co. in cooperation with the U. S. Public Health Service and shown seventeen times during the campaign by the Washington Water Power Co. Consequently, the cardboard ties on the milk bottles were so many billet-doux, reminding Spokanites of what they had already resolved to do.

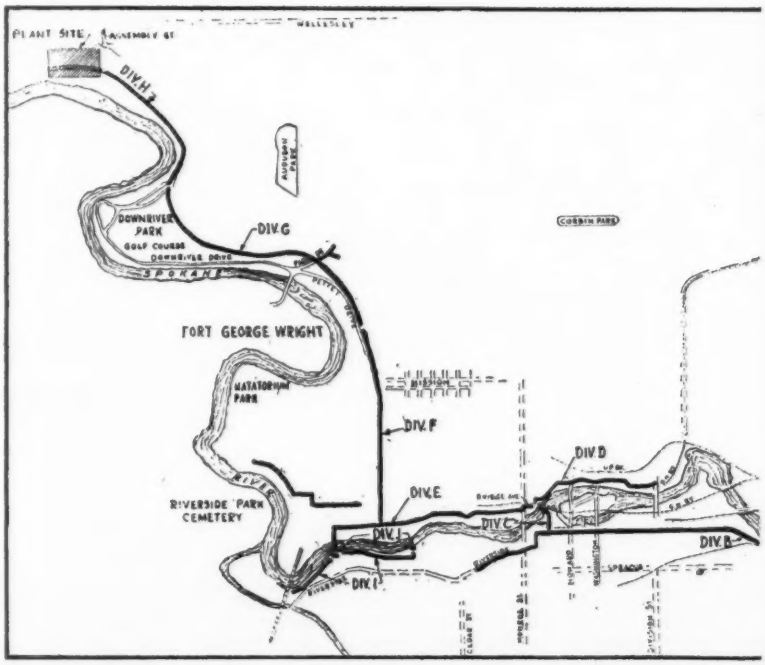
Over 35.000 residents cast their vote before the ballot boxes were closed the night of June 4. Never before in the history of Spokane had more than 17,000 voters turned out for a June election. Four times before a referendum for a sewage disposal plant had been overwhelmingly defeated. This time the proposal was carried almost unanimously, with 34.000 out of the 35,000 voters marking "yes" on their ballots.

One factor that occasioned this reversal of form was the offer of $1,048,000 by the State Development Commission to help defray the cost of the proposed project, if the voters approved the bond issue. Another was $951,768 available from the surplus general funds of the city. Thus the opportunity was at hand to erect a $3,700,000 treatment plant for only $1,700,000. Over a twenty-five year period the taxpayer would have to pay only $1 per year on each $1,000 of his assessed property value.

The main factor, however, in this highly successful campaign was the part played by the Committee for the Sewage Disposal Project. A citizens' committee, headed by Dr. Richard Reekie and Harry Goetz, and organized early in the year to put the merits of the proposed treatment plant before the voters and to get out the vote, this group carried out its assignment with unparalleled thoroughness and finesse. Adopting the technique of modern advertising to a municipal issue, they "sold" Spokane completely on the benefits of the project.

Situated on both banks of the Spokane River, the city at present gives no treatment to its sewage. Approximately thirty-four public and private outlets carry the domestic wastes of 90,000 residents to mid-channel and discharge them untreated into the river. The other 50,000 residents are not connected to these outlets.

Industrial sewage from five packing



WHAT?

QUESTION.—What is the Spokane Sewage Disposal Project?

ANSWER.—A plan whereby Spokane will stop discharging raw sewage into the Spokane River and, instead, treat its sewage by sedimentation, sludge digestion and chlorination in a modern sewage disposal plant built for that purpose.

Q.—What does the project consist of?

A.—The construction of approximately 10 miles of intercepting sewers, varying from 8 to 75 inches in diameter, located on the north and south banks of the Spokane River, including three river crossings and one major pumping station, all of which are necessary to convey the sewage to a treatment plant, which will be constructed on the north side of the river near the west city limits.

WHY?

Q.—Why is such a system of sewage disposal needed at this time?

A.—At the present time there are approximately 34 public and private outlets by which raw and untreated sewage is being dumped into the Spokane river. After being dumped into the river, the sewage filters through the several dams of the Washington Water Power Company and empties into the Columbia river approximately 65 miles below the city to the west. These waters travel to Roosevelt Lake, Grand Coulee Dam and eventually through Wenatchee.

Since the year 1933, the State Health Department has on numerous occasions ordered the City to correct this condition because of the potential menace to the health of our citizens. The State of Washington at the 1941 session of the legislature passed a law ordering the City of Spokane to correct this condition.

In addition to the health menace involved the river is injurious to fish life and makes camping and scenic spots unsightly and undesirable for public use.

Q.—Does this have a bearing on the future growth of Spokane?

A.—Very definitely. Spokane is growing rapidly now and faces a condition of more congested housing. To continue to discharge sewage into the river will not only increase the danger of epidemics but also definitely turn away from Spokane prospective residents. To construct a modern disposal plant and clean up the river will do more than any one thing to attract to Spokane the high class of citizens we want, especially those with young children. It will enhance Spokane's reputation as the "City Healthful", supplementing its recognized standing as the City Beautiful.

HOW?

Q.—What will the treatment of the sewage in the disposal plant accomplish?

A.—It will furnish what is called a primary treatment, followed by chlorination, which will remove 60% of the solids and all the harmful bacteria. The engineers have assured us that this percentage of primary treatment is adequate and in conformity with the percentage used by other large cities. It likewise has the approval of the State Health Department and the State Pollution Commission.

However, the disposal plant will be constructed in such a manner that it may be readily added to. Should the percentage of treatment at any time prove inadequate the plant can be enlarged at nominal cost so as to increase the percentage of treatment.

Q.—Will the construction of this system eliminate pollution of the river by industries within and without the city?

A.—It will, of course, eliminate industrial pollution by industries located within the city limits. The legislature at the 1945 session passed a law creating a State Pollution Control Commission which is given broad powers in preventing pollution of all waters of the State. This Commission has already taken positive action in correcting many industrial pollution problems on the coast.

Q.—For what period of time will the construction of the sewers and treating plant solve the problem of sewage disposal?

A.—The intercepting sewers as proposed are designed to be adequate for 50 years. At the present time it is estimated that under favorable conditions the population of Spokane by that time will have increased to approximately 258,000 people. The sewage treatment plant is designed to be adequate for a period of about 20 years. As the cost of construction of sewage treatment structures is relatively less than for sewers, the sewage treatment plant can be readily added to as needed at relatively lower costs than for sewers.

WHO?

Q.—What engineers have designed the proposed system of sewers and disposal plant?

A.—Greeley & Hansen of Chicago, Illinois, a well-known firm of recognized standing.

Q.—Has the proposal as it will appear on the ballot been approved by civic organizations?

A.—Yes, by many, including the Spokane Taxpayers Association, the Spokane County Medical Society, the Spokane Chamber of Commerce, the American Federation of Labor, the C.I.O., the Realty Board, the P.-T.A., the Lions Club, the Veterans of Foreign Wars, the Old Age Pension League, the East Side Commercial Club, the Retail Lumbermen, the Spokane District Dental Society, the B.O.F., the Retail Trade Bureau, the Spokane Construction Council, the Spokane Osteopathic Association, the Park Board, the Retail Druggists Association, the Spokane Federation of Women's Clubs, and many others.

WHEN?

Q.—What will the date of the special election be?

A.—Tuesday, June 4, 1946.

Q.—How large a vote must be cast to assure the passage of the bond issue?

A.—We recommend a vote of not less than 24,000. Sixty (60) per cent of those voting must favor the proposition.

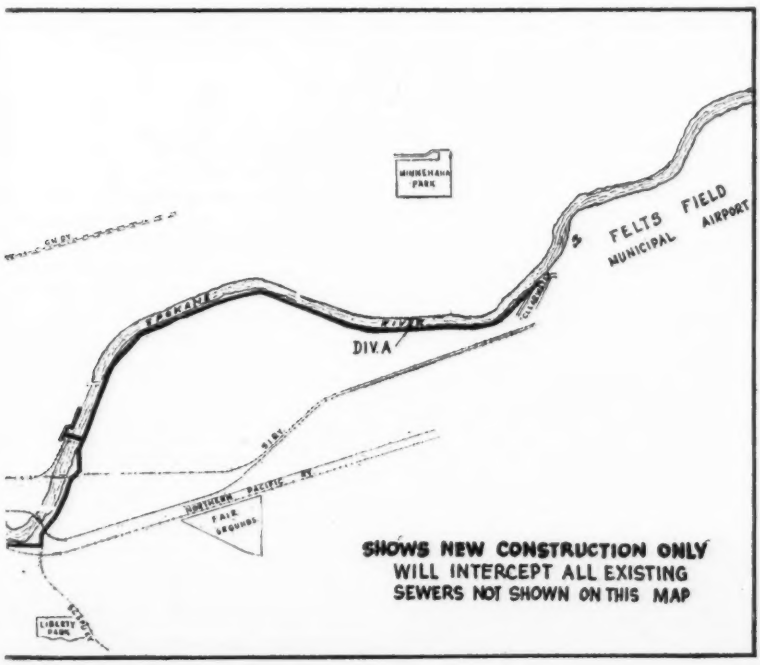
The Committee FOR the Sewage Disposal Project:

DR. RICHARD D. REEKIE and HARRY GOETZ, Co-chairmen,

603-604 Mohawk Building, Riverside 7989.

houses and two flour mills within the city and a large paper mill seven miles upstream just about equals the total domestic wastes.

Visible pollution is manifest at various points along the river banks. Sewage solids accumulate at the bottoms of pools below the city, forming sludge banks of concentrated pollution. A desirable recreation area below the city has been rendered hazardous and unusable for bathing purposes.



Since 1933 the state health department has, on numerous occasions, ordered the city to correct these conditions because of the potential menace to public health. In March of 1933, and again in November of the same year, the voters refused to authorize the expenditures needed to remedy the situation. After the state health department had again ordered the city to take steps toward abating the nuisance, another election was held in March 1936. Again the voters rejected, by a count of two to one, the proposed construction of intercepting sewers and a disposal plant. An extension of time by the health department, another preliminary survey, and a referendum in 1940 met with similar disapproval by the voters. Finally, in 1941, the Washington legislature passed a law ordering all first-class cities, including Spokane, to correct sewage conditions.

The war intervened and prevented Spokane from carrying out the order. But when it became clear, early this year, that the city council would submit the question of a bond issue for the construction of an adequate sewage system and disposal plant, a civic-minded citizens' committee determined that this time it must not fail.

The first job of the committee was an educational one. The previous failures of the referenda were attributed to

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ignorance and misinformation concerning the merits of the proposal. To eliminate this obstacle, a pamphlet in question and answer form was prepared early in the campaign, giving the salient facts about the project and its extent, cost, and benefits, and anticipating objections that might be raised. This was mailed to every city residence to arouse discussion, generate questions, and give supporters of the project ammunition.

Newspaper Publicity

The committee relied on newspaper publicity to a considerable extent to drive home the importance of the project. The daily morning paper, the *Spokesman-Review*, accepted a series of statements over the signatures of prominent citizens, pointing out the advantages of the project and the need for it. These appeared almost daily over a period of two months. The evening paper, the *Chronicle*, confined its coverage to news items provided by the publicity department of the committee or gathered by its reporters.

Cooperation by the newspapers was particularly important because in prior elections opposition stemmed from their publisher, who was against bond issues and favored the pay-as-you-go plan for necessary improvements. Just before the close of the campaign the morning paper gave its editorial endorsement to the whole project.

From the outset the committee concentrated its efforts on winning the support of every organization in the city. A standard resolution favoring the clean-up of the Spokane River and endorsing the bond issue was submitted to every available group for adoption. Representatives of all organizations were enlisted to serve as members on the board of directors of the campaign. Speakers were supplied to all organizations having meetings during the campaign. The city firemen did effective work in speaking before neighborhood groups and in circulating information on the proposal, for the question of a raise in their own pay was also on the referendum.

Motion Picture

During the educational phase of the campaign, *Clean Waters*, the motion picture produced by General Electric, was shown on every possible occasion, starting with service clubs and major civic organizations and carrying on down to small neighborhood groups. The Washington Water Power Co. sponsored all these showings. The committee felt that this was a tremendously effective medium for educating the voters on the dangers of polluted waters and the desirability of treating sewage before discharging it into the river. It proved an important factor in the general acceptance which the project received and in the favorable vote on the bond issue.

As the campaign progressed, emphasis was shifted from publicizing the merits of the project to getting out the vote. The 40-mill requirement of the state constitution stipulated that a bond issue must be voted on by 40% as many voters as voted in the last preceding general election. Of those voting, 60% must approve the bond issue to carry it. This provision was construed to mean that at least 24,000 voters were required, but one newspaper account held that only 12,000 votes were needed, since a municipal election had been interpreted by the courts as a general election. Since there was disagreement on this point, the committee set its sights for 25,000 votes.

In no prior special election held during the summer, had there been more than 16,000 to 17,000 votes cast. In order to help break all previous records for vote-getting in this type of election, radio was utilized freely, much of the time being donated by the stations and by radio advertisers. Newspaper advertising was also used and built up to the final full-page ad in both papers contributed by the Spokane and Inland Empire Progress Committee, which consisted of 190 firms and individuals who backed the proposal.

The results of the entire campaign proved the effectiveness of concerted action, utilizing the support of all civic organizations and the methods of modern advertising.

Both the new treatment plant and intercepting sewer are being designed by Greeley and Hansen, consulting engineers of Chicago, Ill.

Plant Location and Design

The new treatment plant will be located on the north bank of the Spokane River near the western limits. The proposed plant will be designed to meet the requirements of the estimated 1965 population of 174,000, with provisions for future additions. In its initial capacity it will handle an average flow of 42 million gallons per day, a maximum flow of 104 million gallons and a minimum flow of 26 million.

The plant will be equipped with a combined bar screen and grit chamber, with the screenings ground and returned to the sewage. The chlorine room will house the necessary equipment for disinfection of the sewage before its entrance to the sedimentation tanks. Three sedimentation tanks, 77 feet wide and 185 feet long, will be provided with sludge collecting mechanism. The digestion tanks will draw off the sludge and heat and collect the sludge gas for the generation of required process heat. The digested sludge will be vacuum filtered.

The main building, 65 feet by 125 feet, with two floors and a basement, will house filters, chemical storage, feeding equipment, laboratory, offices, machine shop and garage.

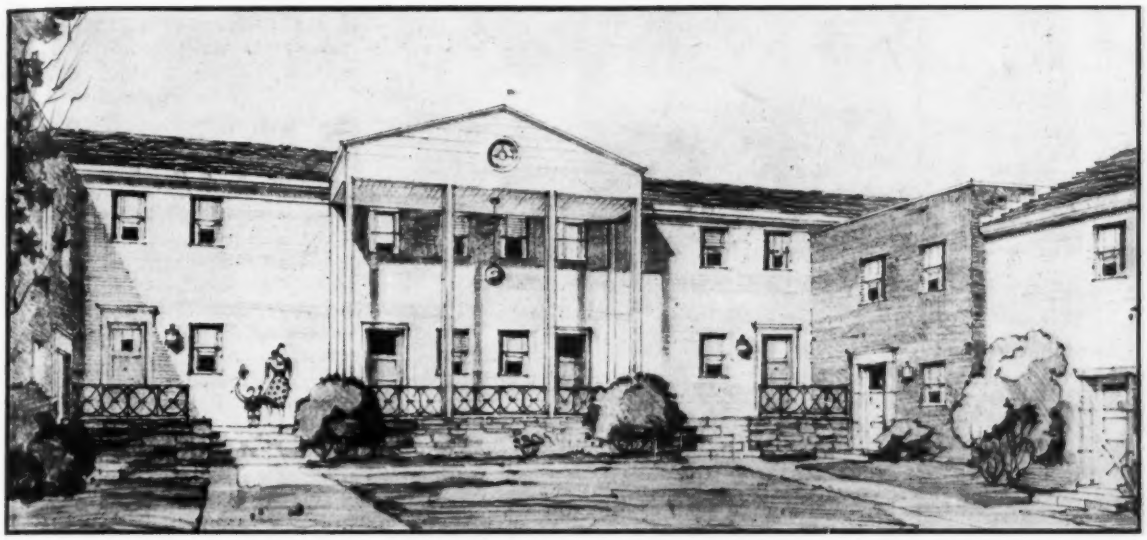
Memorials for Happiness and Health

AN INVESTMENT in happiness and health, in the form of a community center, is given special emphasis as a logical form of "living memorial" in the report of James Dahir on "Community Centers as Living War Memorials" to the Russell Sage Foundation, 130 East 22 St., New York.*

It is through wise and enjoyable use of leisure, according to authorities cited in this study, that man can develop his full personality. The community center can offer many things—club rooms, a workshop for hobbyists, an auditorium and stage for music-lovers and amateur actors, a gymnasium, perhaps a pool or an outdoor ball field—which the average person cannot afford for himself, but which the community group, in the opinion of many, can easily afford. And as the home of local clubs, athletic teams, and hobby groups, the center becomes "the living-room of the community," humming with wholesome social activity; not least among its functions is rescuing people from the all-too-common curse of loneliness.

Thus the community center is an investment in happiness and health. Perhaps the most important function of the center, however, is as a forum and a "focus of local patriotism." Its meeting rooms make possible a modern form of the old town hall or hot-stove league, in which public questions—local, national, and international—are debated. And community services are stimulated; "the war years accustomed us to doing things together, and citizen groups, formed to serve the needs of war, are in many places determined to serve the needs of peace also."

* 63-page pamphlet, 50 cents. See also, in our last issue, Mr. Dahir's article, "Neighborhood Memorial Recreation Center for Coatesville," pages 99 and 100. See also "Commemoration Through Community Services," THE AMERICAN CITY's brochure on living war memorials.



End court view of Hancock Village. Three types of architecture blend harmoniously.

Distinctive Features of Insurance Company's

Individual Home Development

By VAN NESS BATES
John Hancock Mutual Life Insurance Co., Boston, Mass.

GROUND has been broken and construction is now well under way on Hancock Village—an individual home development for nearly eight hundred families which is being built by the John Hancock Mutual Life Insurance Company approximately six miles southwest of the Massachusetts State House. The garden village will be on 82 out of 145 acres of a rolling, lightly wooded tract, which up to several years ago had been used as a golf course. The land lies one-third in Brookline and two-thirds in Boston's West Roxbury district.

It is a matter of interest that, in undertaking a development involving two municipalities, no major complications were encountered; the utmost cooperation was obtained by the company and its general contractor, the Ring Engineering Company of Washington, D. C., builders of Colonial and Arlington villages in Arlington County, Virginia. A feature of the planning was the layout of the several sections so that no individual dwelling units crossed the municipal boundary line. This was important for school and tax purposes.

Arranged in the form of courts or rows, according to the contour of the land, Hancock Village will consist of four different building types, totaling 789 dwelling units—all of two-story construction and duplex dwelling type with foyer, living room, dining alcove, and kitchen on the first floor, bedrooms and bath on the second.

Some of the dwelling units will have interchangeable second floor arrangements so that two adjacent homes may contain two bedrooms each, or one and three. This novel feature will permit a certain measure of flexibility in adjusting accommodations to tenants' requirements. The living rooms and bedrooms will not be located on the street or court side but will all look out through large picture windows on attractively landscaped interior park areas. These sheltered spaces will contribute toward safety for children's play by day and peaceful sleep at night. Directly outside the park area entrance of each home will be a small paved terrace, and planting will be permitted.

Three general types of architecture will be harmonized to give variety and charm—the New England red brick colonial with sloping roofs, the contemporary flat-roofed homes, and white-

This is how a typical gardenside elevation will appear in Hancock Village.

painted brick dwellings with metal grille balcony effects in southern style. The buildings will be almost entirely constructed of incombustible materials. There will be no basements, and radiant heating will be employed throughout, with small gas fuel heating units located on the second floor of every third or fourth home, accessible only to staff employes. Each tenant will have thermostatic control of his own dwelling unit, and heating, gas refrigeration, and gas for cooking will all be included in the rent.

Wide Range of Facilities

Hancock Village features will include easily accessible laundry units at adequate intervals, with electric washers, dryers, and ironers on a meter basis. A complete maintenance staff will be employed. A small commercial area is to be developed in which there will be both a social hall and a hobby shop, as well as facilities for storing large articles. A special feature provides theft-proof service compartments in which trash cans may be left to be picked up daily and which will receive milk, newspapers, and other deliveries. It is also expected that accommodation maid service will be furnished at a nominal cost, together with a central switchboard telephone service and a nursery school. A large recreational park and play field is being developed adjacent to the project, and schools, churches, and shopping facilities are ample. Hancock Village fronts directly on the Veterans of Foreign Wars Parkway, which is part of U. S. route 1 from Maine to Florida, and a crossparkway nearby makes possible direct access to the development over parkway routes from downtown Boston and all parts of the metropolitan district.

Suggestions Invited

Often urged by governmental and municipal authorities to undertake large-scale projects to help overcome the housing shortage, John Hancock has taken this first step in a resolute determination to do its full share in the building of a better-housed America—in spite of construction costs, material shortages, and the many difficulties which are encountered in the building field today. Life insurance companies, as has recently been stated by the Institute of Life Insurance, are going into housing on an increasing scale. Some $150,000,000 worth of developments are now either under way or in the planning stage. It is manifest from this that a number of the leading insurance companies are alert to the possibilities in this field and are receptive to sound suggestions which may be made to them by municipal officials and others who are interested.

Towns Aided By University In Planning

LEXINGTON, Republican City, Lincoln, Scottsbluff, Syracuse, and Norfolk are among the Nebraska small towns becoming more "city-planning-conscious" and which have been or are being aided by the University of Nebraska architecture department.

Professor Linus Burr Smith, chairman of the department, attributes this wave of civic consciousness to problems resulting from abnormal wartime and post-war expansion and inadequate planning on a long-time basis.

Chief problems listed by Professor Smith are traffic and parking troubles, inadequate sewage disposal systems, unattractive appearance, lack of civic centers such as auditoriums, parks, or governmental buildings, and lack of recreational facilities.

City Takes Action On Planning Board Reports

CITY planning reports have not been allowed to gather dust in East Orange, N. J. Much discussion was aroused in the city and steps are being taken to carry out the planning board's recommendations as a result of its recent study, *Housing and Zoning*.

One suggested measure was the creation of a housing authority to make possible the construction of low-rental housing in deteriorated sections of the city. For many years, the city has been reluctant to enter into any housing program, but recently the City Council authorized the appointment of such an authority.

The planning board has been working for some months on a new zoning ordinance drawn along the lines discussed in the report. Conferences have been held with many civic groups, real estate interests, etc., and the board will soon announce its recommendations and present the new ordinance to the City Council.

Progress is also expected and the groundwork has been laid for the redevelopment proposals of the report as a result of the passage in March 1946 of the New Jersey Urban Redevelopment Law. This law permits large-scale redevelopment projects to be undertaken by insurance companies and other sources of capital in cooperation with the city, which provides the land and enters into a leasing arrangement with the redeveloper.

A further aid to the report's proposals, although no actual constructions have yet been started, is the New Jersey Bond Law amendment. This amendment declares that bonds issued by municipalities for acquisition of land for redevelopment projects may be classed as revenue bonds if they are self-supporting from project revenue.

Wichita's Story of SOFT WATER

Wichita supplies water to a private company for distribution and obtains a supply far better suited to the requirements of this progressive Kansas community.

IT WASN'T merely the hard water that made the people of Wichita complain a few years ago. What they really didn't like was the brackishness and the foul taste of the water. Other than that, conditions were eminently satisfactory. But the people in this city do not own their own water system. Consequently, it was not simply a matter of going down to the water department and demanding action. The problem required a little different approach.

No one was particularly critical of the private company. With the supply at hand, it was doing the best it could, and it was willing to cooperate on any sort of improvement program that would result in better water for its customers. Consequently, both the city and the company looked with favorable interest on an arrangement whereby the city would develop better water and the company would distribute it.

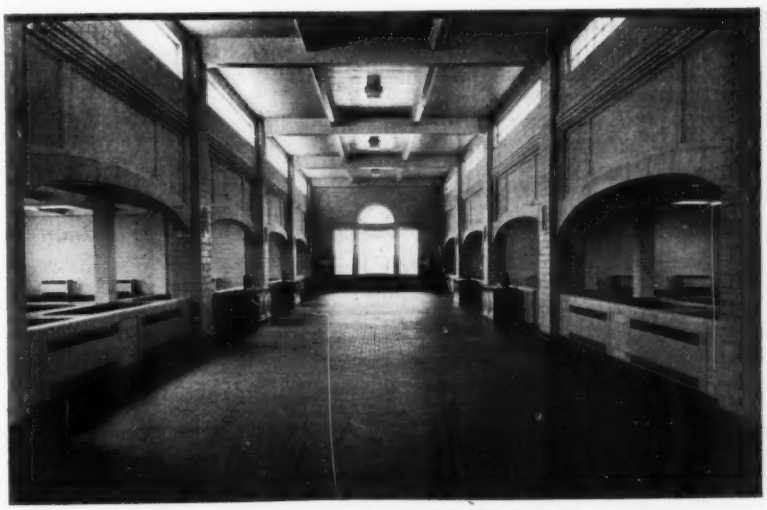
A couple of good economic reasons existed that made this arrangement expedient. One of the most important was that the project was established during the lush days of PWA grants, when a city could write off 45% of its cost of construction as a gift from the government; but a private company had to stand alone and unaided. Another reason was that the city had arranged to study in detail the geologic formations close by and uncover a good water-bearing strata through a share-the-cost investigation in cooperation with the U. S. Geological Survey.

At any rate, the city did embark on this study and turned up with the information that good water could be developed from a formation known as the Equus beds, located roughly thirty-five miles northwest of the city.

This was the best news that the people of Wichita had heard in a long time. Although it involved about 2½ million dollars and would almost certainly mean an increase in water rates, it nevertheless received the active support of civic groups throughout the city. The Wichita Chamber of Commerce established a soft water committee and actively campaigned for its adoption. When the issue was put to a vote, the people approved the project by a majority of four to one.

The plan that was developed called for the city to operate the supply facilities, including the pumping and filter plant, and to deliver the water to the plant of the Wichita Water Company. This company in turn agreed to deliver the water to the consumers on the present rate basis with a surcharge of 15% to residents of the city and 30% to those residing outside the city. This surcharge was earmarked to meet the cost of operating the plant and amortizing the bonds and interest charges.

Wichita water-treating facilities, attractively built and landscaped.



The filter gallery that helps produce a soft iron-free water.

In addition to this, the water company agreed to pay the city $7,380 per year to balance lower operating costs, since it no longer had to pump from its wells. Nevertheless, the company was required to keep its well supply in operating condition for standby and emergency service. The company also agreed to pay the city $10 per million gallons for the water delivered by the new plant.

The Equus Beds actually are a sort of giant natural storage reservoir, charged by a 1,000-square-mile drainage area. It is composed of alternating layers of sand and clay, underlaid by a

heavy stratum of gravel saturated with water. These sand-gravel strata purify the water in exactly the same manner as does a slow sand filter. Thus the water is naturally soft, pure, and abundant.

To draw water from this field, the city constructed twenty-five gravel-wall wells along a nine-mile front. The wells vary in depth from 80 to 260 feet and have a total yield of 32 mgd. Each well is equipped with an electrically driven deep-well Layne vertical turbine pump. The pumps and wells may be controlled individually either from the filter plant or the pumping stations.

Pollution from Oil Wastes Must Be Checked

The fine natural resource that the beds represent calls for careful attention so that no pollution or contamination from oil wastes enters from the oil fields lying northwest of the field. To insure against the possibility of pollution intrusion, the city, in conjunction with the state board of health and the Kansas Geological Survey, maintains a full-time geologist, checking possible oil brine pollution. These agencies utilize over 1,200 observation wells surrounding the well field and in nearby oil fields and by continuous observation can determine the exact time that pollution occurs and trace it to the source.

The pipe line, varying in size from 42 to 48 inches, was the object of careful engineering study. The design called for a special weight of side-wall for specific trench loadings and required that each piece be manufactured for the exact section where it was to be used and individually numbered to prevent errors in laying.

A trenching machine excavated for the pipeline, leaving vertical side slopes and excavating to a firm foundation for the pipe. Workmen backfilled carefully by tamping in 6-inch layers to a distance 6 inches above the center lines of the pipe.

The water flows by gravity from the field to the filter plant at an average slope of 5¼ feet per mile. Near the center of the well field on the main supply line is an automatically operated cone valve which maintains the required operating pressure head in the lines above that point at all times. At the lower end of the field, and at 5-mile intervals along the line, are manually operated cone valves which may be used to isolate sections, to facilitate inspection, or emergency repair. Another cone valve at the filter plant operates by a float-controlled mechanism and regulates the flow through the plant. The line is also protected by air-relief valves, vacuum relief valves, surge-relief valves and blow-off valves, each in a concrete structure locked against intruders.

The carrying capacity of the line by gravity is 32 mgd. By putting a booster pumping station at a strategic point along the line this capacity can be raised by 60 mgd.

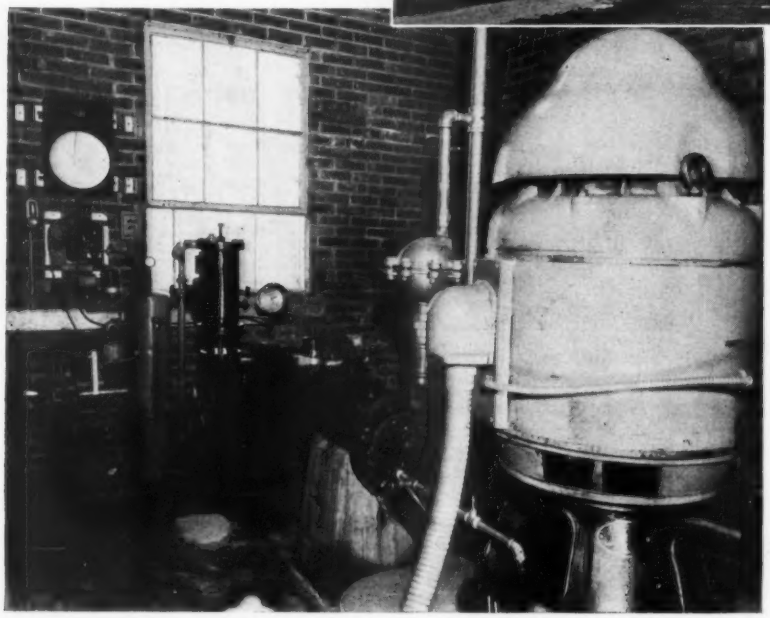
Functions of the Filter Plant

The filter plant was designed originally only for the purpose of reducing the amount of iron in the water. However, as something of an afterthought, the city decided to enlarge this service for softening. The process includes the usual preaeration over coke trays for the removal of dissolved gases and oxidation of iron and manganese. This is followed by flash mixing, with lime and alum added, and by flocculation, clarifying and filtering, and treatment with hexametaphosphate.

After filtration, the water passes into storage basins with a capacity of four million gallons. From these basins the filtered water is conducted to the reservoir and pumps of the water company. The water receives a small post-chlorination residual to insure purity throughout the delivery.

Right: The well-field control station, showing the control station, the garage workshop, the well house, and the residence of the well-field attendant.

Below: The well house holds a draw-down and discharge-pressure recorder as well as the pump and the automatically operated cone valves.



One notable experience with the pipeline demonstrated the value of pre-chlorination. Soon after the line went into use, the operators noted the presence of a heavy and excessive slime growth caused by the iron bacteria. In effect, the pipeline formed a long, iron-removal plant, but in so doing it markedly cut down on its water-carrying capacity. For a counter measure, the operators provided for pre-chlorination at the well field and inhibited the growth of the bacterial life. Nevertheless, they were faced with a full-time main-cleaning project early in the line's operation.

Perhaps of greatest significance is the comparison between the water Wichita had before the plant went into

(*Continued on page* 103)

City Electricians Meet at Miami

The latest in fire alarm, wire and cable, batteries, traffic signals, and radio described to members.

THE atmosphere at the fifty-first meeting of the International Municipal Signal Association at Miami was mellower than at other annual meetings. The relaxation appeared quite general, a manifestation of Miami's magic.

The city was chartered just a half century ago. Even in 1910 the population was only 6,000; then each succeeding decade revealed such figures as 29,000, 110,000, 172,000, and today, 200,000.

The first professional note was struck by Frederick B. Philbrick, president of the Gamewell Company. His theme was reducing the time element between the outbreak of a fire and the alarm. The importance of the subject is established by the menacing fact that each of the last nine years has exceeded its predecessor in the amount of fire losses. Clearly, education and even fireproof construction are not enough. There are too many other factors involved for them to prevent fires. The practical answer is to know when they start. The Vigalarm automatic fire detecting system is designed to do this —not just to sound an alarm when finally someone has discovered the fire, but to feel out the fire and yell instantly by wire to the municipal fire department.

Turning to the wires and cables that carry the alarm, Howard H. Weber, sales manager, Wire and Cable Department, United States Rubber Company, sounded a timely warning on the dwindling supplies of copper and lead and the present shortage of rubber and fine cotton yarn. He also emphasized that the substitutes — aluminum, synthetic rubber, and non-metallic coverings— are not makeshifts and stopgaps, but new, excellent electrical materials in their own right. Where before the war cables insulated by synthetic rubber were produced in hundreds of miles and natural rubber in millions, now the figures reverse, and there is plenty of competition. There are more than ample raw sources of aluminum which, refined, costs 15 cents a pound against 14⅜ cents for copper. But aluminum weighs one-third of copper—a factor for lower costs even though a size larger wire must be used.

More on the subject was brought out by E. W. Davis of the Simplex Wire and Cable Company, Cambridge, Mass. Experience in producing 900,000 tons of synthetic rubber a year has resulted in a better product than natural rubber, in Mr. Davis' opinion. Analysis of 300 cable failures disclosed that 90% of them were due to poor terminals and joints, meaning installation craftsmanship. Of the remaining 10%, half would not have occurred had synthetic rubber insulation been used, because they were chiefly failures caused by "light checking" to which synthetic rubber is largely impervious. Of the synthetic insulations, he spoke favorably of Polyethyline with Polyethyline jacket instead of lead and urged that IMSA specifications permit the use of these synthetic rubber insulations.

Storage Battery Maintenance

Storage battery maintenance men lack the glamor of the fire fighters, said Harrison Taylor of the Electric Storage Battery Company. "No small boys will ask to hold the voltmeter or the hydrometer. Nevertheless it's a good story that never ends." These rules should be followed:

Have a good battery
Have it accessible for maintenance
Keep it in a clean, dry location
Keep it within easy reach of the maintainer standing on the floor
Have clean, tight connections
Have plenty of aisle space
Shield battery from sunshine and radiator
Keep same age cells together
Keep "invalid" batteries together
Keep air temperature moderate and uniform

Elaborating on only the last requisite, a battery correctly charged at 2.15 volts in a room maintained at 70 degrees should last ten years. A battery correctly charged at 2.15 volts in a room kept at 90 degrees may be expected to expire in seven and one-half years.

A Day with Traffic Signals

The importance of traffic signal maintenance and of having an idea of the trend in signal design and location was furnished by a full day of papers culminating in a spirited panel discussion. The leader was Fred J. Meno II, senior associate electrical engineer of Detroit's Public Lighting Commission, who also spoke on "Maintenance Features of the Ideal Traffic Signal Controller and Signals." Among main needed improvements are corrosion-proof heads and fittings, including screws, simple locking heads, elimination of oiling, cabinets large enough to house the devices requisite to advances in the science of traffic control, and, finally, a dependability equaling that of the domestic refrigerator.

After all, a traffic light is a lamp, and lamps must either burn out sometime or be replaced before that happens. To attain not only double security but double vision and visibility as well, the modern trend is to install eight signal heads at each intersection, two on each corner. The cost is moderate, and the resulting insurance and greater certainty of observance, plus reduction of accident hazards, appeal to an increasing number of progressive city officials. Chicago has long practiced this method. Other cities using twin signal heads on each corner are Buffalo, Dallas, Detroit, Flint, Houston, and Pittsburgh, all safety- and civic-minded communities.

Traffic signal problems in Miami were set forth by Earl J. Reeder, city traffic engineer and formerly a prominent figure in the National Safety Council. The city's mushroom growth in permanent as well as winter population posed problems peculiar to the major resort city. Mr. Reeder treated them individually, bringing them within the experience of many present from non-resort cities. In many cities one sees what appears to be instances of traffic signal timing that appears not to fit the traffic pattern. At southeast Avenue and 2nd Street and at 13th Street and Biscayne Boulevard it was found that 60 and 62 seconds, respectively, were not sufficient to thin out the traffic flows; 90 seconds did it. A number of streets are not wide enough to permit four lanes, but the intersections are. So, 100 feet from the corners, four-lane approaches were marked, and the traffic instinctively widened and more cars crossed the avenues, thus permitting shorter timing for the same number of cars passed. Many signals are cable-suspended over the middle of the intersection, compelling the drivers to look up into Miami sunshine. These will all be replaced by signals on corner posts.

The various types and operating characteristics of vehicle detectors, together with correct methods of installing, were outlined by John L. Barker,

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assistant chief engineer of the Automatic Signal Corporation. The two types are the pressure-sensitive and the magnetic. Which one to use is largely a matter of preference. As all vehicles contain iron and carry with them a magnetic field, in passing over a coil in a magnetic detector they induce an impulse which actuates a sensitive relay which closes a contact and operates the traffic signal controller.

Out of a wide and varied experience in conduit and cable installation, Frank H. Hubbard, city electrician of Decatur, Ill., recommended that along with the installation of cable a telephone system be installed with transmitters at intersections. Much time will thus be saved in directing maintenance men where to go from where they are. His major injunction was to install enough conductors and then lay one or two ducts beyond the presently foreseeable need, to avoid cutting up the streets later. Proper installations should last indefinitely; so, keep inspectors on the tail of the contractor. Don't lay the cable in the earth, and plan the ducts for draining. To designate the north-south and east-west circuits, use city-wide color codes. Use standard manhole design. Don't tie the entire system together, but wire in such a manner that a faulty intersection may be isolated. Finally, maintain a log on each controller and once a year bring in every controller for check.

Prepare to get used to a new high in new cable costs, cautioned Perry E. Benton, superintendent of signals of Dayton, Ohio, whose subject was "Frequency Responsive Relays for Directing Fire Apparatus." These relays, sometimes called "torsonal relays," a Wallace & Tiernan Product, permit certain new signalling without requiring additional conductors.

In the absence of Holden M. LeRoy of Detroit's Traffic Engineering Bureau, his paper on "What the Traffic Engineer Desires in Modern Traffic Signals" was read by Don McNeill, traffic engineer of Pittsburgh, Pa. The call was for flexibility to prevent bottlenecks. Signal requirements at peak traffic are different from those at other times. Clock switches may often be required to program the signals through the day and night. Moreover, any such change in cycle must not be made during the amber period nor the green period on cross streets.

Mr. McNeill then talked from his own experience. In Pittsburgh every traffic signal is inspected each twenty-four hours. The wisdom of this practice is indicated by the fact that the city has never lost a court case involving signal controversy. This despite the fact that from one to three times a week the traffic engineering department is called to testify in such cases. Mr. McNeill not only urged but offered to aid in a fight to compel the provision of two-filament traffic signal lamps. Pittsburgh has a unique color sequence which provides for a warning to both drivers and pedestrians that the green period is closing.

Main Street

Green
Green and yellow (5 seconds)
Yellow (2½ seconds)
Red
Red
Red

Cross Street

Red
Red
Red
Green
Green and yellow (5 seconds)
Yellow (2½ seconds)

Fire Alarm Day

Through a small item in his paper on "Trends," William F. Hennessy, electrical engineer, Bureau of Fire Alarm Telegraph of the City of New York, set off the liveliest discussion of the convention with his remarks on false alarms. They amounted to 39% of New York's alarms in 1945. Is public education the answer? It only increases the number of such alarms. The less said about them the better, and this is the experience in London, England, whose fire officials recommend suffering in silence. Miami, Fla., Dayton, Ohio, and Arlington, Mass., put a powder or emulsion such as gentian violet powder with vasoline on the hook or handle. Only under black light does this show as a purple stain on the fingers and face and clothes.

Discussion of the fire-alarm telegraph system usually simmers down to an insufficiency of boxes, lack of public concern over their location and importance as a pure means of definite alarm, and an increasing use of the telephone. In New York there are 2,000,000 telephones and 12,000 fire-alarm boxes. Most recognize the necessity of the fire-alarm system and concede that it is neglected.

The police telegraph system as a fire defense recognized by the National Board of Fire Underwriters was presented by Edward J. McCarthy, general sales manager of the Gamewell Company. He pointed out that neither the radio nor the wire system is self-sufficient, but that together they furnish a competent protection to the public. The telegraph also protects the patrolman in the performance of his duty and, with a telephone in each box, permits him to report occurences without leaving his post. Increasing interest is shown in the citizen call feature. If a citizen can call his fire alarm headquarters, why should not means be provided for him to summon police assistance? Boston does it by means of a lever extending through the outer door of the police call box. In Houston the boxes are used by officials of eight municipal departments.

The live and critical subject of allocations of frequencies for fire and police departments was frankly presented by Glen Nielson, chief electrical engineer, Federal Radio Communication Commission, and Dan E. Noble, chairman of the Radio Technical Planning Board and general manager of the Galvin Manufacturing Corporation, Chicago. The problem is to fit all the emergency radio agencies—trucks, taxicabs, transit, and forestry, as well as fire and police—into the 30-40 megacycle and 152.2-164.2 mc bands amicably. The new 152.2-164.2 mc equipment and problems were discussed by C. M. Heiden of the General Electric Company. "Adequate Generators and Power Supply for Mobile Equipment" was handled by Harold J. Zuske, Leece-Neville Company, Cleveland.

Need Stressed for Permanent Improved Garden Program

THE week of February 2-8, designated as National Garden Planning Week, calls attention to the peacetime national garden program, which is still of great importance in providing better nutrition for Americans, as well as in helping to supply foreign food relief needs through the increased consumption of home-grown vegetables.

In a message to the National Garden Conference, held in Washington last month, President Truman said:

"The value of gardening in building strong bodies, healthy minds, and a happy people has never been greater. Today we need physical strength to increase production of all the commodities the nation needs; we need moral strength to combat inflation and other economic dislocations; we need spiritual strength to see us through the trying days of post-war readjustment. We need clear minds to cope with the problems of establishing a lasting peace. Today we need relaxation, happiness, and congenial relationships among our people.

Responding to the President's appeal, the Conference unanimously requested that he create a permanent National Advisory Garden Commission "to secure the necessary leadership in a permanent staff for the effective furtherance of programs in the planning and improvement of the home, its grounds, and its community."

At Least One Good Runway

Des Moines, Iowa, takes stock of its war-lessons in airport requirements and builds its principal runway adequate to meet post-war requirements.

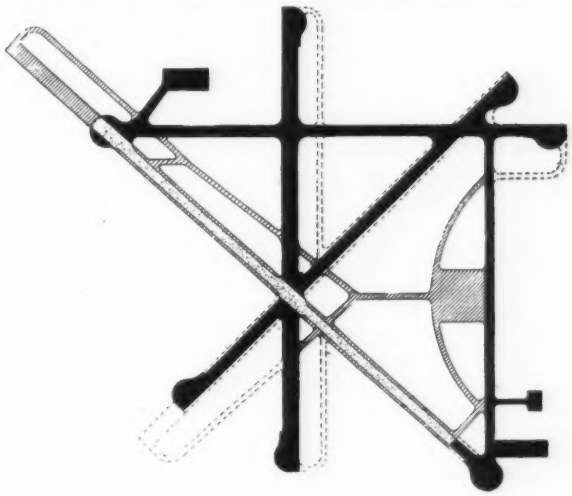
FOUR years ago Des Moines was WPA-ing its way through the construction of an airport. City Engineer John Tippee and Airport Manager Art Thomas were trying to complete a project that had been under way longer than either liked to remember. It was a good project, well designed in strict accordance with the most advanced principles for airport planning. Its runways, crisscrossed in workman-like fashion, were 100 feet wide and roughly 4,500 feet long, composed of 7-5-7 inch concrete laid in 20-foot widths. Normally it would have been expected to be adequate for many years.

About that time, WPA, that dogged builder who left his famous mark on so many municipalities, suddenly lumbered to a halt and retired, releasing crews of "unemployables" for work in the war plants and factories of a nation gearing itself for battle. Consequently, Engineer Tippee's and Manager Thomas' airport project suddenly found itself laid on the shelf, hopefully awaiting the "post-war era." Congress, apparently recognizing that had WPA adhered to its construction schedule it would have completed the project long before this closing date, appropriated around $800,000 to complete the project when this era appeared.

Although not apparent at the time, that delay was an actual blessing for the Des Moines airport. No one, not even the most profound student of aeronautics, could have possibly forecast the changes that air travel would undergo during the next few years. The history of airport design is studded with brilliant names whose forecasts of airport requirements have been so far from their marks to be almost embarrassing. This is not in criticism of them since it was impossible to make an intelligent forecast from the data available.

Air Travel Increased

During the ensuing period, Manager Thomas saw commercial air travel rise, unscheduled flights increase, military travel come in great solemn squadrons varying from sleek knife-like fighters to powerful superforts, all landing on those 100-foot wide runways with their 5-inch slabs. Manager Thomas almost expected to see the runways roll up like a rug when a flock of these heavy bombers would land.



The NW-SE runway of Des Moines' airport after its new revision and extension from 4,500 to 5,700 feet. Portions in black indicate existing runways; those crosshatches indicate new construction; and the dotted lines show future work.

Finally the occasion arose when those plans could be pulled off the shelf, reexamined, and scheduled for completion. But Engineer Tippee, Manager Thomas, and the CAA were much wiser in the ways of post-war aviation than they were back in 1940. A conference resulted in the decision to take what money was available and rebuild at least one runway that would have a better chance to bear up under the heavy modern plane loads.

Consequently, they redesigned the NW-SE runway extending to 5,700 feet.

Airport Manager Art Thomas examines one of the lights of the new runway.

A few finishing touches to the runway. Drainage pipe is being installed.

They cut off a section at one end where buildings affect the installation of an instrument approach system. They called for a section 150 feet wide and 8 inches deep throughout and dummy joints at 25-foot intervals and an expansion joint every 100 feet, all thoroughly equipped with load-transfer dowel bars. They installed new Revere boundary lights at 200-foot intervals on the new extension. Des Moines, incidentally, was second in the U. S. to have contact lights and the first to establish 200-foot intervals for the runway lights.

The improvement also includes a new system of taxi-ways which will make it possible to move the administration building from its crowded position in the southeastern corner of the field to a more accessible location directly east.

This project, which was put into construction early this spring by the Koss Construction Co., Des Moines, is complete now. The runway is, of course, only one step in the expansion program; however, it is an important one. Approximately 18% of the prevailing winds are northwest and 16%, southeast; consequently, the bulk of the travel will be on this runway. The greater length of the runway will give added protection to planes landing during periods when wind velocity is low.

"We had to revise our sights," Mr. Thomas states. "There was no use completing a project that was obsolete. We simply had to recognize that what was good enough in the late '30s wasn't good enough today."

"However," he adds, "that old 5-inch pavement took an awful beating and stood up nobly."

Teaneck Constructs New Dog Pound From Proceeds of License Fees

NEVER let it be said that the Township of Teaneck, N. J., is going to the dogs. In fact, the dog situation there is well under control as a result of Teaneck's streamlining of the vexatious municipal function of rounding up, caring for, and disposing of stray dogs. Innovations that have been made in Teaneck include the construction of an attractive, modern, completely equipped dog pound, the installation of a two-way radio in the dog warden's truck, and the photographing of every dog supposed to be rabid.

According to information furnished by Paul A. Volcker, municipal manager, the new dog pound was constructed entirely from the proceeds of license fees. The New Jersey Dog Licensing Act of 1941 requires that 25 cents of each license fee be transmitted to the state for use in research, for anti-rabies vaccines, and the employment of state inspectors. The balance of the fees must be retained by the municipalities in a separate fund used solely for expenses incurred in the control of the local dog population. Only when the funds show a balance equal to at least one year's total cost may a municipality use any such balance for general purposes.

Right: Teaneck's dog warden using his radio.

Left: The recently constructed modern dog pound for Teaneck, N. J. Note the silhouettes of fighting cats on the roof.

Benefits from New System

Under the old system, when dog licenses were considered as general municipal funds, reports Mr. Volcker, only a fractional part thereof was actually expended for dog control. Under the new system, aside from permitting Teaneck to pay a decent wage to the dog warden and furnishing a proper truck and equipment, a sufficient balance was built up to permit the erection of a dog pound at a total cost, including the wire fences, plumbing and heating, of approximately $4,000.

The two-way radio on the dog wagon has proved practical and enables the dog warden to render greatly improved service. Formerly, it was a hopeless proposition to get immediate satisfactory action on complaints from township residents about stray dogs. When a call is received at the Teaneck police desk about a stray dog now, the call is instantly transmitted and the dog warden can respond without delay to remedy the situation immediately.

Pictures are taken of dogs suspected of having rabies to avoid public fear and hysteria as to whether an individual or a child may have had contact with a particular dog. Having the dog pictures available for public inspection serves either to allay fears or, in an isolated case, confirms a suspicion of possible rabies contraction. In such cases, the individual can then undergo immediate treatment for the disease.

The Winecoff Hotel Fire *And Its Lessons*

IN the early morning hours of Saturday, December 7, 1946, a fire of unknown origin spread throughout the capacity-filled Winecoff Hotel in the central business district of Atlanta, Georgia. The 15-story building, small in ground area, was of fireproof construction — which, however, does not mean it should have been called a "fireproof hotel." The only means of exit from the upper floors was one centrally located open stairway around enclosed elevator shafts.

Apparently, the fire started on the third floor (at x in plan) and, when discovered, had gained considerable headway. The draft from the open stairshaft spread the fire to the upper floors, making stairs and hallways impassable and cutting off the escape of the occupants of the upper floors.

A telephone alarm brought within ten minutes a full response of all apparatus of the city department and some outside help. For three hours all available firemen fought the fire and conducted rescue work. This rescue occupied the efforts of a considerable proportion of the force. This factor, combined with the height of the building and the blazing contents and trim, restricted the fire-fighting to hose lines below the fire. Thus the fire could not be cut off, and loss of life was severe on all floors above the third.

Discovery of the Fire

A few minutes after 3:30 a.m. the elevator operator took some guests to the tenth floor and, upon her return, reported to the desk clerk that she smelled smoke between the third and sixth floors. The clerk directed her to go to the fifth floor to locate the building engineer. Going to the mezzanine floor, the clerk saw the reflection of the fire in the stairway above. He telephoned the fire department at 3:42 and began to phone the guests.

By the time the apparatus arrived, guests were jumping out of the windows, and the hallways were burning from the third to the fifth floors. Though the halls had little combustible material except carpet, painted surfaces, and wooden room doors, the draft made the fire intense and rapid. All doors had transoms, and the majority of these were open, permitting heated gases, smoke, and flames to enter the rooms.

At 6:30, the firemen had reached the top floor by way of the central stairs, extinguishing as they went. On the fifteenth floor the fire damage was limited to hallways and was small. Heaviest damage was from the seventh to the twelfth floors inclusive.

The loss of life was large on all floors from fourth to fifteenth inclusive. The majority of those who attempted to escape through hallways died from heated air, smoke, and poisons of combustion. Others died in their rooms, or by jumping. In all, 122 persons died, and 91 were injured. About 25 firemen were overcome or injured.

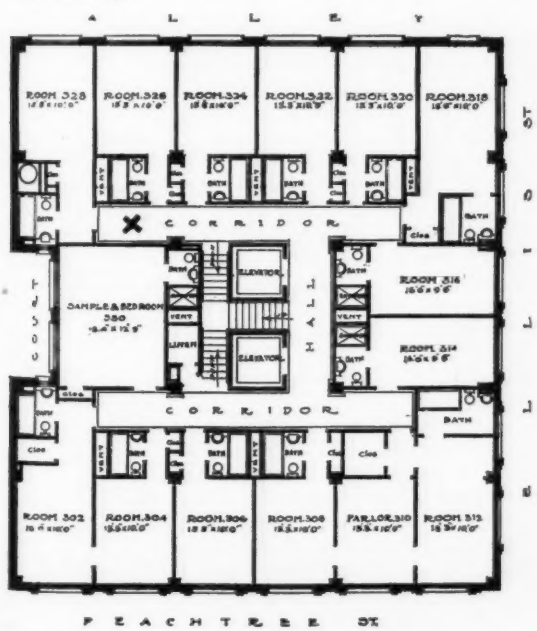
The Lesson and Its Use

Though a building be of non-combustible construction, the contents and furnishings may produce a fire that will quickly fill the hallways with toxic gases. The most serious conditions in this and similar fires are the upward spread of the fire from floor to floor and the access of the fire to the rooms through transoms and doors of unsuitable quality.

These last conditions are inherited from past years, when building regulations had not been developed on the principle of protecting lives of people in high buildings. The first step is the enclosure of all openings between floors, including stairways, elevators, dumbwaiters, and pipe shafts, to prevent spread from floor to floor. The second step is the use of corridor-type fire doors, or heavy solid 1½- to 1¾-inch wooden doors, to all rooms with no transoms.

Where total enclosure cannot be carried out, the installation of automatic sprinklers may prove satisfactory. Minimum sprinkling would cover halls, cor-

Right: The Winecoff Hotel ablaze from third floor up. Below: Third floor plan of the Winecoff shows where fire started.



ridors, stairways, and storerooms. Much better would be to include all bedrooms as well, because a fire in one room can pass from the window and enter the window above, as the photograph shows.

Exterior fire escapes on a building with open stairways are inadequate. They would be available only from the corridors, which in this fire were a deathtrap. What is needed are fire-safe interior stairways enclosed throughout.

Automatic Fire Alarm System Needed

An automatic fire alarm system transmitting an alarm to the fire department would prove of value. Without this, there should be an established rule in hotels, apartment houses, clubs, dormitories, etc., to notify the fire department upon any indication of fire or smoke. The fundamental purpose of fire service in any place where people sleep is not to get them out of the building but, wherever possible, to make the building safe for the occupants to remain in their rooms. This means *keep the fire from spreading.*

The foregoing article was prepared in cooperation with W. E. MALLALIEU, General Manager, National Board of Fire Underwriters.

Fire Safety Rules

for Hotel Guests

Recommended by The National Board of Fire Underwriters

1. **Upon arriving at your hotel room, investigate all possible means of emergency exit.**
2. **Read carefully any instructions to guests posted in room.**
3. **Be as careful in a hotel as you would be in your own home. Do not smoke in bed.**
4. **If you detect smoke or evidence of fire, give immediate information of this to the management.**
5. **Close door transom at once.**
6. **Take time to plan your exit.**
7. **Feel the door before you open it. If it does not feel hot, open slightly. Hold head away, brace door with foot, and put hand across the crack.**
8. **If hallway appears safe, use the already planned exit.**
9. **If hallway is not safe, use any means to stop up any openings or cracks by which smoke may enter, using wet towels, etc.**
10. **Open window slightly and stay near it. Avoid hysteria. Do not jump out. Many lives have been saved where regular exits were unusable by closing doors and transoms, blocking all openings for hot air and gases from hallway, and calmly awaiting rescue.**

How Should Property Be Valued For Assessment Today?

ALTHOUGH progress has been made in many cities during the last two decades in the administration of the property tax, assessors are more confused today than ever before as to the *true value* of property. This was the theme of a paper presented at the recent twenty-third annual meeting of the American Municipal Association by Kenneth J. McCarren, member of the Board of Assessors of Detroit, Mich.

"It has been said that the assessor does not make values," said Mr. McCarren, "his duty is to find the value and record it upon the assessment roll, which means using sales or reproduction cost as the basis for the assessment.

"Right here is where the assessor runs into difficulty because the rules, tables, formulae and other scientific procedure that have been adopted cannot be put into operation until he finds a base, which in the past has always been sales or replacement. But, present-day sales do not reflect the true value—at least not true value under a stable economy. We all know that the cost of residential property today is out of proportion with the cost of other commodities. It is far beyond the pocket-book of the average working man and, in the opinion of many economists, must be reduced. Families are, in fact, being required to pay a premium for shelter.

"In using reproduction cost as the basis of assessment, allowances should be made, of course, for structural depreciation, obsolescence, and other factors. This is recognized as a more sound and equitable method. But the reproduction cost of homes today is also out of proportion to other costs."

The Detroit assessor did not have any ready-made solution for this problem of finding an equitable cost base. Rather, "each assessing officer will have to solve his own problem as he sees it. Because of the complexities or of possible repercussions, it is not an easy task; however, that is no excuse for passing it by. . . . Assessments should be increased to the values the assessors believe will remain after our economy has been adjusted to a normal basis."

In conclusion, Mr. McCarren expressed the opinion that the general property tax will continue as the major source of revenue for the support of local government. "I believe," he added, "that it is possible to overtax both real and personal property. Therefore we should continue to fight for a division of state-collected revenues. But you are going to have a hard time convincing the state and federal levels that you are in dire need and must receive assistance, if it is obvious to both administrators and laymen that property in your city is either escaping taxation or being partially taxed."

Central Tax Accounting And Billing by Machines

Results: Bigger collections, less delinquency, lower office costs, less drudgery, city's credit improved, and accurate bills and accounts.

By PAUL G. DE MURO
Commissioner, Department of Revenue and Finance, Passaic, N. J.

AFTER a detailed study of the records used in the tax collector's office, the city of Passaic, N. J., adopted a plan of complete mechanization of the tax billing and accounting system.

Before adoption of the plan, many tax offices in the immediate vicinity and in the state were visited to see mechanical equipment in operation. A number of ways were worked out to improve and modernize existing methods and provide better and more adequate controls.

The offices covered were those in charge of the assessment of both real and personal property, special assessments, and collection of current and delinquent taxes. Included in the report were a number of recommendations dealing with the work methods of assessment of property and the levy and collection of taxes.

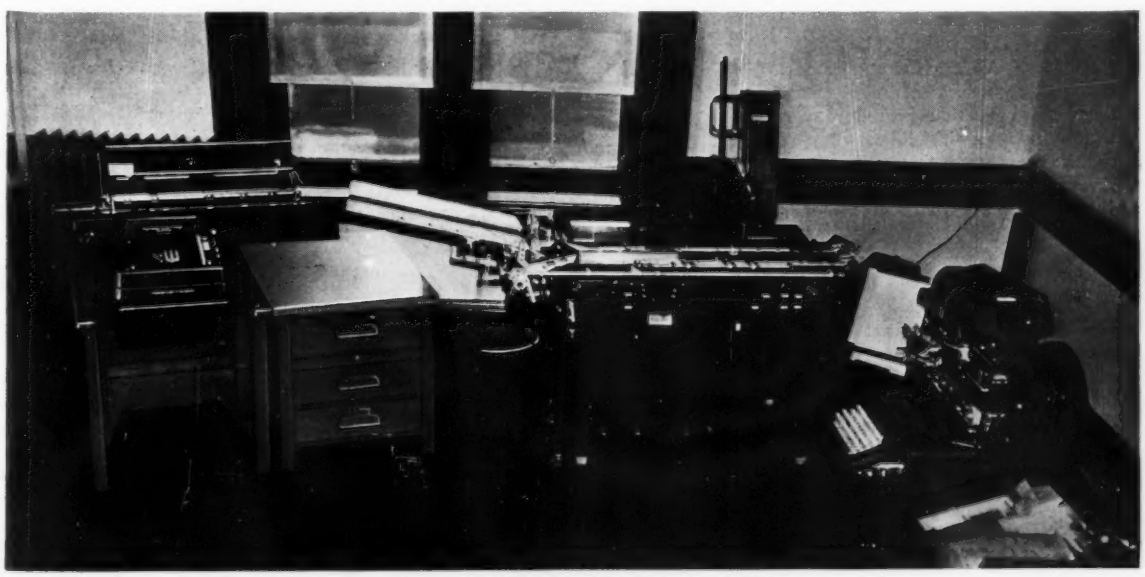
At the time of the study, Passaic was suffering from acute growing pains, and rapid changes had made unreasonable demands on the billing and accounting system in the tax collector's office. The office equipment then consisted of two antiquated adding machines and two typewriters. All assessments, tax notices, tax roll, accounting, and utility billing were done by hand. The extensions on the tax roll were computed or taken from tables and written in longhand. Temporary clerks, sometimes four, were employed to complete the extensions on the roll and to make the tax bills. The hand method unquestionably was not efficient, and delays and frequent errors resulted. Errors were not detected until some time after the temporary help had left and bills were out. Many adjustments in accounts had to be made.

To understand the changes made, it is desirable to have some knowledge of the methods used previously.

In the Hand-and-Pen Days

The Board of Assessors performs the actual work of determining valuations on both real and personal property. The peak period of the assessor's work falls between October 1 and January 10, while making the annual field appraisal of property. Before modernization of our methods, each assessor was required also to prepare three complete sets of books—all handwritten and each containing the property owner's name and the street address and block and lot number of each piece of real property in his district, with valuations. Each set of books had to be compared and checked for errors or omissions. The next task was writing in the valuations by hand and extending the tax in the collector's book, after which each set was totaled by page and district and again compared to insure identical records. On the tax bills, the assessors then wrote the amount of the tax and the page and line reference from the collector's copy, after which the bills were compared with the books. The entire procedure was needlessly slow and endlessly involved, requiring as it did a disproportionate amount of time at the routine clerical task of comparing names and figures in three sets of books by hand.

There were 10,000 real property assesments, 9,000 personal property and 6,000 poll assessments, a total of 25,000. Making three sets of books each



These are the new tax collection machines: left, an Underwood Sundstrand tax-computing and billing machine; and at right, the Addressograph machines.

year required the copying, checking, and balancing of 135,000 postings in ledgers, 135,000 in cash books, and 100,000 interest postings, making a total of 370,000 annual total postings involving names, addresses, descriptions, and amounts, plus filling in 20,000 tax bills with the amount of tax and page and line reference.

The routine followed in the tax collector's office gave evidence of needless duplication and, in addition, lacked proper safeguards recognized as necessary in modern municipal accounting. The procedure provided no record of receipts at the cage window, other than the stubs. Stubs from the cage were consolidated, after which they were arranged by book, page and line number, conforming to the receiver's books. A cash book was then written by hand, giving the name, property location, amount of tax, and the amount of discount or penalty for each payment. Payments were posted in the tax receiver's books from the cash book by the clerks working in teams. As one clerk called the page and line, a second located the tax payer in the receiver's books from which he read the amount of tax levied. Upon completion of this posting, the clerks exchanged books, the former reading from the receiver's books to check back the items to postings in the cash book.

It is apparent that this procedure, like that of the assessing department, involved endless copying and recopying, which in the end provided only a minimum of control of much extra work. Such routine was followed later in copying the delinquent tax records for the use of the offices in charge of delinquent real estate and delinquent personal tax collections.

Such were the conditions in the finance offices. After a thorough study, a thoroughly modern addressing, tax billing, and collection procedure was instituted, along with installation of mechanical equipment that performs the work with speed and accuracy, and, in addition, automatically provides adequate controls.

Come the Machines

The first and most serious problem corrected was the manual writing, computing, and proving of three sets of tax and assessment records.

This routine operation was one of the most time-consuming tasks being performed. Its solution lay in the use of the mechanical data-writing and computing equipment such as is used in private business practice. The equipment selected for the initial installation was an Addressograph with three-column lister attachment, together with Graphotype equipment for cutting the plates. The time and labor involved in writing the books was tremendously reduced by installing Addressograph machines, which mechanically and largely automatically print from embossed metal plates all descriptive data regarding each property. These plates have three removable sections, two of which carry three lines of information describing the property, including its location by street address and by district, block and lot number, in addition to giving the dimensions of the property and containing a set of symbols denoting whether the land is vacant or improved.

With the correct data embossed on metal plates, the human factor causing incorrect spelling and descriptions is permanently eliminated. The city now has a fireproof, indestructible record of both property owners and property descriptions.

With descriptive data embossed on metal plates, the first operation is making the assessor's books, by listing on sheets the taxpayer's name and the property description. The books are completely and accurately written in a single operation, and the necessity for reading back to detect errors or omissions is eliminated. Further, the records are much more condensed than formerly and are more neatly arranged, are fully legible, and are completed in a fraction of the time formerly required.

There is finally one additional and very considerable saving in time and effort gained by the use of the Addressograph. Two copies of the assessment books, one for the assessor's office and the other for the County Board of Taxation, contain identical information and can be prepared at the same time on the addressing machine. When one set is written and proved, the other is likewise finished.

Because of the quirks of the New Jersey law relating to tax billing, the receiver's book or tax roll cannot be completed at one time, insofar as computing the tax is concerned.

On the metal plates, there is also an accounting number which is printed by machine, and this number also appears on the tax bill and serves as a reference in finding the appropriate item in the book when tax payments are being posted.

Included in the file of plates are several thousand that bear only names used as references in making the books. Still other plates describe property which is exempt from taxation. For such plates there is, of course, no need for bills, though they must be printed in the book; and if given a number they would throw the number in sequence out of order. The selecting mechanism of the machine is so constructed that when one of these plates reaches the printing position, the number and section is thrown out of position and does not print.

The printing and addressing of the tax bills, prior to computing the tax amounts on the tax accounting machines, is performed on the Addressagraph. On this operation three impressions of the data from the taxpayer's plates are needed, once on the body of the bill and once on each of the two stubs. The plates are in the same order as listed in the receiver's books, and the numbers given to the bills are the same as those appearing opposite the same names in the books. This number is used as reference in posting the ledger cards in place of a page and line reference formerly copied on the bills by hand.

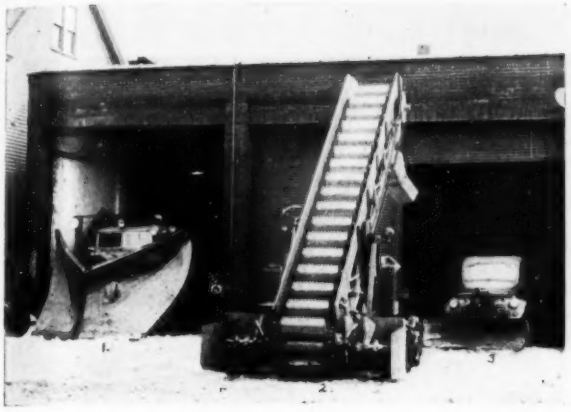
(To be concluded in the February issue)

Housing Community for Tri-Cities Area

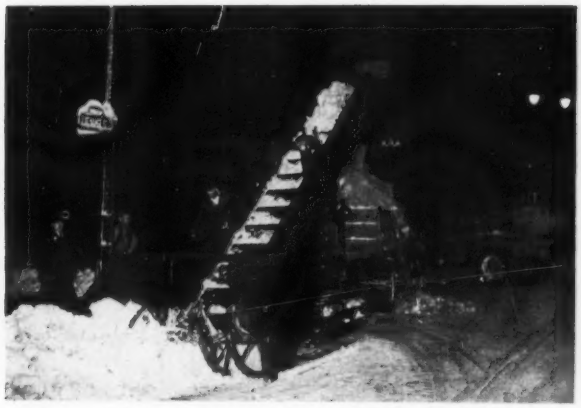
THE Security Mutual Life Insurance Company of Binghamton, N. Y., has retained the housing firm of Harrison, Ballard & Allen, of New York, to develop a housing community in the Tri-Cities area of Binghamton, Endicott, and Johnson City. The company has optioned a 200-acre area in Vestal Township, which is in the geographical center of the Tri-Cities area and includes a nine-hole golf course.

The selection of the site followed an extensive housing market survey by Harrison, Ballard & Allen which demonstrated the need for about 12,000 new dwelling units in the immediate area. A substantial part of this demand is for rental housing. Considerable expansion is planned in the Tri-Cities district by many of the local industries, including the plants of the Endicott-Johnson Corporation, International Business Machines Corporation at Endicott, Ozalid at Johnson City, and Ansco and Link Aviation in Binghamton.

With the opening of a new bridge across the Susquehanna River near the location of the site, the Vestal Hills area will become an attractive, convenient location for residential construction because of its strategic position in relation to the main centers of employment in the Tri-Cities area. The Security Mutual plans a residential community of garden type apartments for rental.



Rochester's equipment lined up ready to go into action: A Frink plow, mounted on a Walter truck; a Haiss loader; and a Good Roads plow mounted on a ½ GMC truck, all in good working order.



Snow cleaning crews work on into the night. Here one of the Rochester's five Barber-Greene snow loaders tackles a drift at nine in the evening. The snow will be dumped into the Genessee River.

Rochester, N. Y., Fights Snow

WHEN ONE INCH of snow falls in Rochester, Chief Cindering Inspector Frank Viccaritti begins alerting key men in the Department of Public Works. He telephones Bill Murray and Louis Severson to order out as many plows as seem required to handle a snowstorm. He then telephones the snow office, the motor equipment dispatcher, the commissioner of public works, and the city manager.

Frank Viccaritti, with his chore of telephoning done, now turns his attention to the elimination of slippery streets. Under the supervision of E. M. Van Gelder, he and a group of inspectors keep eagle-eyed control over the city's danger spots on a 24-hour basis.

The city is well equipped for meeting snow emergencies. During 1944-45 the department of public works strengthened its snow-fighting ability by purchasing three power graders, which are used principally on the downtown streets. They are particularly useful for removing ice and snow that freezes to the pavement surface.

Much of the equipment is rented. The department rents eight road scrapers and uses them on bus routes and main thoroughfares. It also rents bulldozers and uses them in outlying districts and dead-end streets and on unimproved streets where other plowing equipment might be damaged.

When the department must remove large amounts of snow, it puts into use its five Barber-Greene loaders and two new Haiss loaders purchased at the end of the 1944-45 season. These units load privately owned trucks that dump the snow into the Genesee River through snow holes provided on the Court St., the Broad Street, and the Smith Street bridges.

Most of the snow-fighting equipment is versatile. The graders are used in good weather for reshaping and regrading city streets. Most of the trucks and other equipment simply shed their plows and go back to their normal job of flushing streets or hauling garbage and refuse.

To further help in the removal of snow, the city council last year passed an ordinance prohibiting cars from parking on streets between the hours of midnight and 8:00 a.m. This has been particularly helpful to snow removal crews, since at those hours traffic is at its lowest ebb and men can work to the best advantage.

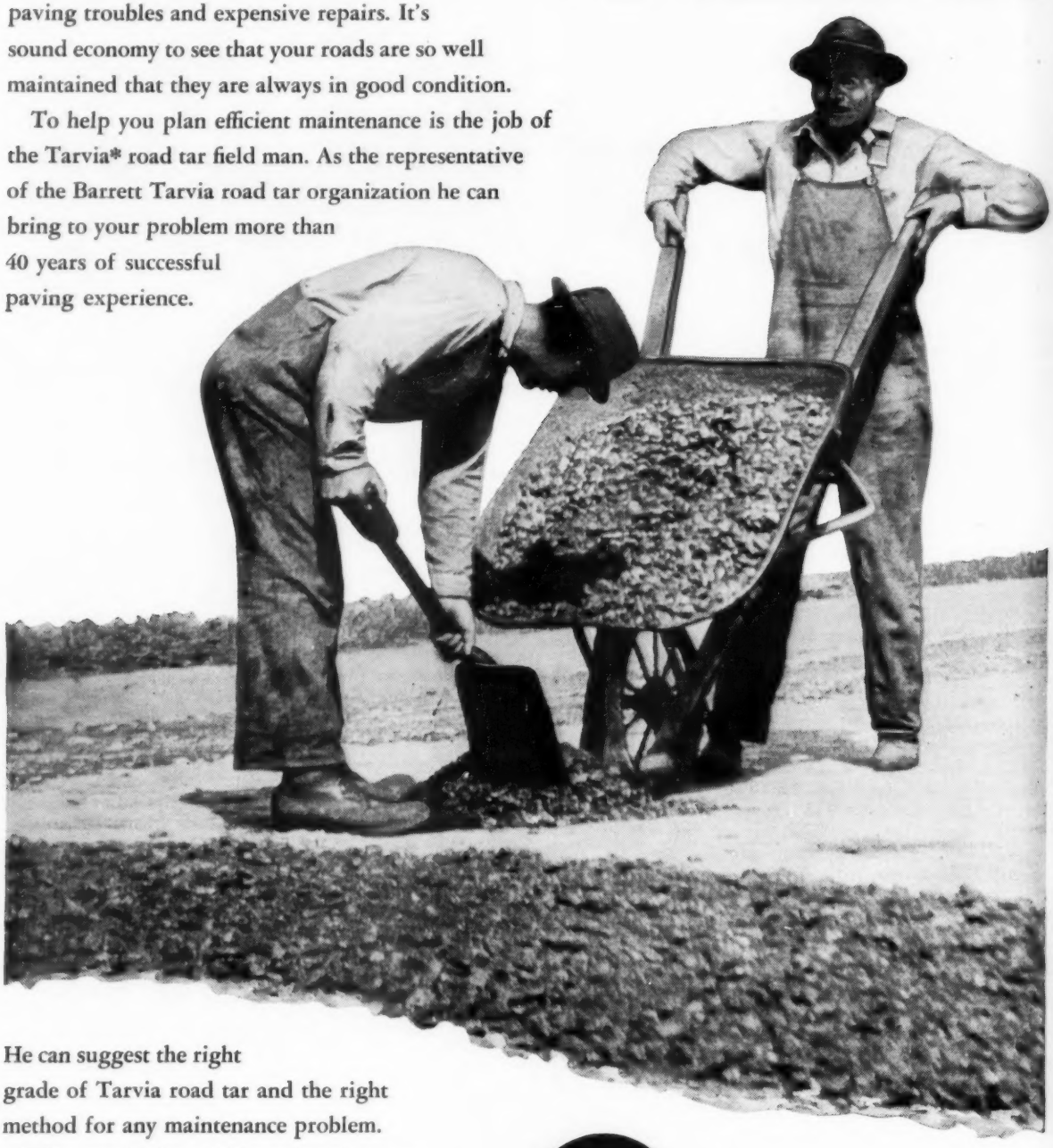
To help keep things moving smoothly during a snowstorm, the department has two inspectors, appointed on the recommendation of the mayor. These men report directly to the commissioner of public works on irregularities in the entire system, such as broken equipment, congested traffic conditions, or any inefficiencies which tend to hamper the removal of snow from these areas of the city.

Rochester's Snogo makes a clean sweep of snow piled on the city's airport runways.

HOW TO KEEP A ROAD HEALTHY

Regular seasonal inspection and attention to small surface defects can often prevent serious paving troubles and expensive repairs. It's sound economy to see that your roads are so well maintained that they are always in good condition.

To help you plan efficient maintenance is the job of the Tarvia* road tar field man. As the representative of the Barrett Tarvia road tar organization he can bring to your problem more than 40 years of successful paving experience.



He can suggest the right grade of Tarvia road tar and the right method for any maintenance problem.

Why not check with him today? Plan *now* to put your roads in healthy condition . . . and to keep them that way.

• • •

"THE LONGEST MILE," a 30 minute, full-color, sound film on the development and importance of roads will soon be available for showing to highway officials, engineers and civic groups. Ask the Tarvia road tar field man for it, or write the nearest Barrett Tarvia road tar office.

Barrett

THE BARRETT DIVISION
ALLIED CHEMICAL & DYE CORPORATION
40 RECTOR STREET, NEW YORK 6, N. Y.

Tarvia*
*Reg. U. S. Pat. Off.

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Columbus • Youngstown • Ironton, O. • Syracuse • Buffalo • Cincinnati • Bethlehem • Portland, Me.
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Savannah, Ga. • In Canada: THE BARRETT CO., LTD., Montreal • Toronto • Winnipeg • Vancouver

Recent City Manager Appointments

The following portraits are of city managers whose appointments have been announced in preceding issues of The American City

Stephen H. Meem
Beford, Va.

T. K. Jefferis
Grosse Pointe Shores, Mich.

Maj. Gen. James L. Frink
Greensboro, N. C.

William F. Hansen
Ada, Okla.

James D. Dickson
Manistique, Mich.

Richard G. Danner
Miami, Fla.

Cletus R. Allen
Winter Haven, Fla.

Cecil A. Bissonette
Bellows Falls, Vt.

Philadelphia Hotels Go Off the Billboards

THE Philadelphia Hotel Association at a recent meeting agreed unanimously to discontinue all roadside billboard advertising. This action takes effect as current contracts expire. Joseph E. Mears, president of the association and managing director of the Benjamin Franklin Hotel, explains that: "In approximately one year's time all advertising will disappear from the highways, insofar as the Philadelphia hotels are concerned."

Hotels are beginning to realize that the billboard, which registers little more than a name as the motorist flashes by, is not the form of advertising most satisfactory to hotel patrons.

ALBERT S. BARD

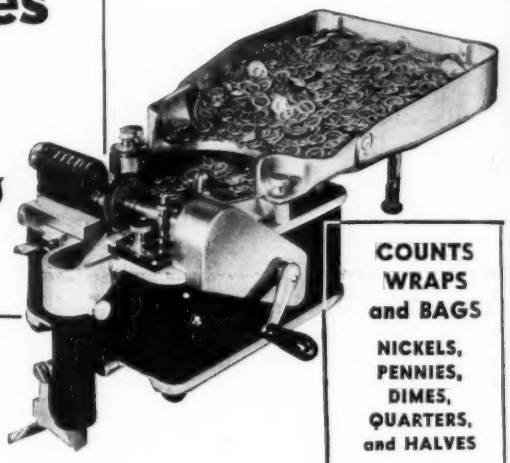
The Municipal Bond Market

Some sales of new issues reported in recent issues of *The Bond Buyer:*

Amount	Borrower and Purpose	Rate (%)	Term (Years)	Basis (%)
$ 57,000	Auburn, N. Y., General Improvement.....	.90	3 Avg.	.89
28,500	Rockville Centre, N. Y., General Improvement	1	3 Avg.	.959
75,000	Meriden, Conn., Sanitary and Storm Sewer	1	5.33 Avg.	.99
345,700	Wyandotte Co., Kans., Bridge.....	1	5.50 Avg.	.992
500,000	Racine, Wis., Temporary Fund.....	1.25	5.83 Avg.	1.194
168,000	Jackson, Tenn., Street Improvement, Series 1946	1.25	3 Avg.	1.30
140,000	Bradford, Pa., Funding and Improvement..	1.25	1-14 Ser.	1.18
500,000	Boston, Mass., Permanent Housing for Veterans of World War II.....	1.50	7.75 Avg.	1.494
45,000	Ironton, Minn., Water Supply Improvement	1.50	3-12 Ser.	1.477
179,000	Linden, N. J., Assessment.....	1.60	3.833 Avg.	1.567
200,000	Bridgetown, Ohio, Local Sch. Dist.....	1.75	2-26 Ser.	1.67
26,000	Portales, N. Mex., Refunding Revenue, Water Works	1.75	3 Avg.	2.192
320,000	Dallas, Texas, Public Market Construction	1.80	1-20 Ser.	1.8571
914,000	Detroit, Mich., Public Utility Water Refunding Series R.....	2	13.5 Avg.	1.973
46,000	Cookeville, Tenn., Water Works Improvement	2.25	9.83 Avg.	2.49
145,000	Mount Prospect, Ill., Municipal Building..	2.50	11.5 Avg.	2.42
201,000	Walsenburg, Colo., Water Extension Refunding	2.50	20.16 Avg.	2.42

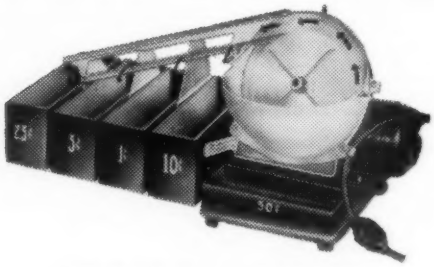
The Two Most Welcome
Mechanical Devices
for Counting Parking Meter Coins

Every package accurately counted and double-checked



COUNTS WRAPS and BAGS

NICKELS, PENNIES, DIMES, QUARTERS, and HALVES



THE COIN SORTER

This ingenious little machine quickly and automatically assorts half-dollars, quarters, dimes, nickels and pennies—each coin dropping into the correct compartment without human guidance.

Assorting is only a matter of minutes!

Even the smallest village with limited budget can afford this machine—and will find it paying for itself in a short time.

Larger cities, too, find it a valuable, time-saving device.

THE COIN COUNTER

This Downey-Johnson Model 20 PH Coin Counter counts, wraps and bags coins of all denominations.

It will count and wrap 175 rolls of coins per hour—or bag 35,000 nickels per hour.

Here is a practical investment that pays dividends daily!

A big time-and-labor-saver, it will gain many valuable hours for other productive purposes—yet it is priced within the reach of all.

Either or both of these machines make a slow, tedious task but a matter of a few moments—with accurate results

WRITE TODAY FOR DETAILS AND PRICES

UNIVERSAL BUSINESS EQUIPMENT COMPANY

537 S. Dearborn Street **Chicago 5, Ill.**

Serving Municipalities from Coast to Coast

Wichita's Story of Soft Water

(*Continued from page* 90)

operation with the water that it has now. The following table lists these differences:

	Former	Present
Total hardness	452	133
Carbonate hardness	190	133
Non-carbonate hardness	259	0
Total alkalinity	190	174
Excess alkalinity	0	41
Calcium	134	39
Magnesium	29	8.5
Sulphates	239	28
Chlorides	500	28
Total solids	1,600	270

The new supply was completed just prior to the wartime industrial expansion, and the city was able to take care of the extremely rapid growth which occurred during this period. Contrary to expectations, however, the city is still growing, and the demand for water is greater than ever before. During the summer of 1946, the demand for water exceeded the capacity of the supply system, and both the city and the water company are now planning a major extension program.

The results are more than apparent. The city now has a supply that the large or small consumer likes and can use, and the change came about not by a battle or by legal difficulties with the privately operated water service, but by cooperation with it.

The 15% surcharge on the water bill is an investment that pays the people of Wichita dividends.

Black & Veatch, consulting engineers of Kansas City, Mo., handled the original development of the Equus Beds soft water supply and have been retained to design the expansion program necessitated by the conversion of Wichita from a farming to a manufacturing center. Milford E. Rogers was water works superintendent at the time of the improvement. Robert H. Hess is the present superintendent. Robert S. Millar is manager of the Wichita Water Co., distributors of the water.

Inventory of Equipment, Wichita Water Supply

25 1,000-gpm well pumps equipped with 15 40-hp electric motors, supplied by Layne-Western Co. and U. S. Electrical Motors, Inc.

33 miles centrifugally spun cast iron pipe line, 14 to 48 inch, supplied by the American Cast Iron Pipe Co.

27 automatic pressure and rate control valves, S. Morgan Smith Co.

2 lime feeders and slakers, 500 lbs. per hour capacity, E. W. Bacharach Co., Kansas City, Mo.

2 dry chemical feeders (alum) 100 lbs. per hour, E. W. Bacharach Co., Kansas City, Mo.

1 automatic visible vacuum chlorinator equipped with automatic differential converter, capacity 200 lbs. per 24 hours, Wallace & Tiernan Co., Inc., Newark, N. J.

1 master visible vacuum chlorinator, capacity 1,000 lbs. per 24 hours, Wallace & Tiernan Co., Inc., Newark, N. J.

1 manual control direct-feed ammoniator, capacity 200 lbs. per 24 hours, Wallace & Tiernan Co., Inc., Newark, N. J.

1 Proportioneers duplex multi-control feeder. Polyphosphate feeder, Builders Iron Foundry, Providence, R. I.

1 Dorrco rapid mix equipment and Type "T" flocculator.

1 Dorrco squarex clarifier, 115 feet square by 16 feet deep.

4 filter-rate controllers, capacity 3 to 8 mgd, Builders Iron Foundry, Providence, R. I.

4 filter control tables, E. W. Bacharach Co., Kansas City, Mo.

1 pneumatic chemical conveyor, capacity 8 tons per hour, Dracco Corp., Cleveland, Ohio.

25 Sparling main-line meters (one for each individual well), furnished by R. W. Sparling, Los Angeles, Calif.

Three Layer Pavement

(*Continued from page* 81)

grade every 50 feet ahead of the finishing machine while laying level course. The surface course was laid to a uniform thickness of slightly over 2 inches.

For the 2-inch leveling course, the grading of the aggregate used was approximately as follows:

Passing	1-inch screen	100%
"	#8 "	30%
"	#200 "	2%

—to which was applied 4.5% paving asphalt of 85-100 penetration. The aggregates used for the surface course conformed to the following approximate grading:

Passing	¾-inch screen	100%
"	#8 "	35%
"	#200 "	4%

—to which was added 5.3% paving asphalt of 85-100 penetration.

The two newly constructed roadways were located on either side of the old macadam pavement which was reserved for the use of traffic during construction. Upon completion of the new pavement, the old pavement was removed and the area between center curbs filled with top soil, to be planted to grass as soon as pipe for the sprinkler system is available.

This route is a portion of the State Highway System of the State of California, and the engineering and inspection on the job were done by the Division of Highways. G. T. McCoy is state highway engineer; S. V. Cortelyou is the district engineer at Los Angeles; F. B. Cressy is the district construction engineer, and C. P. Montgomery was the resident engineer on the project.

The design conforms to standard practice for designing potential traffic loads and soil-bearing values. As soil conditions on this project are excellent, the unusual strength built into the pavement structure reflects heavy traffic demand rather than adverse soils. Foundation studies were made by the staff of the Materials and Research Department of the California Division of Highways under the supervision of Materials and Research Engineer T. E. Stanton, assisted by District Materials Engineer G. R. Halton.

76% of Milwaukee's Transit Riders PICK TROLLEY COACHES!

This is the crowd that turned out to welcome Milwaukee's first trolley coaches in 1936. With the addition of a new line each year (1936 through 1941), similar rider enthusiasm was shown. And in 1946, Milwaukee's riders like trolley coaches better than ever.

Trolley-coach service most nearly approaches the kind of ride one gets in his own car. That's why 76% of Milwaukee's public-transit riders prefer trolley coaches. These facts were brought out by the Advertising Research Foundation, a nationally recognized authority, in a recent survey of Milwaukee's transit riders.

Here's what this public preference means to you: According to authoritative engineering studies, public-transit vehicles use street space *seven times as efficiently as automobiles*. Thus, when transit service is so attractive that people use it regularly and leave their automobiles at home, there is less congestion on city streets, easier accessibility to every part of the city, less decentralization, more stabilized realty values, steadier tax receipts. And—as more and more people use transit—more street space is released for those who must use their automobiles for daily intown travel.

Preferred by the public—fast, comfortable trolley coaches are being universally acclaimed as the ideal vehicle to keep public-transit riding high and traffic congestion low. Their smooth stop-and-go and safe curb loading enable trolley coaches to maintain high schedule speeds safely. And their greater flexibility and maneuverability make it possible for their drivers to keep moving in congested traffic. That's why these speedy electrics hold their own in busy traffic lanes and enable all traffic to move faster.

If you'd like to investigate the possibility of using trolley coaches on your city's transit system, a G-E transportation specialist will gladly help you determine on which lines these electrics would be economically best suited. *Apparatus Dept., General Electric Company, Schenectady 5, N. Y.*

Have you seen

LIFESTREAM OF THE CITY

the movie that shows how to minimize traffic congestion? Ask your G-E representative to arrange for a showing.

GENERAL ELECTRIC

Better Street Use With Traffic Signals

By EARL J. REEDER
City Traffic Engineer
Miami, Fla.

WHILE endowed with many attractions that bring people from all over the country, Miami has traffic problems that require more ingenuity on the part of the traffic engineer than do problems of many other cities with the same normal population of 200,000.

Three characteristics which especially affect its traffic signal problems are railway grade crossings on or close to important thoroughfares, river bridges whose heavy traffic load is frequently interrupted to allow boats to pass, and very short north and south blocks that make coordination of traffic control difficult.

Cycle Changes Help Solve Problems

One of the first traffic signal problems which we attacked last winter, shortly after the establishment of our traffic engineering division, was at S.E. Second Avenue and Second Street, where a three-phase signal had been installed. While it is essentially a right-angle intersection, the heaviest traffic moves between the south and the east approaches.

This signal had been operating on an evenly divided 60-second cycle, but during the rush hours it had been necessary to have the signals manually operated because on that cycle they could not handle the traffic automatically. Computations based on traffic-volume and vehicle-spacing observations showed that a 90-second cycle was necessary to handle the traffic at the peak, with the longest "go" period for traffic from the east. This revised timing was applied, and approach lanes were marked to encourage better use of the street by vehicles from the various directions, particularly those that turned.

Observations had also shown that the order of the phases, showing "greens" first north and south, then east, then west, producing a clockwise sequence, was causing left-turning vehicles from the north, at the time of the signal change, to be marooned in the intersections with vehicles going both front and rear in making turns from east to south. So the sequence was changed to counterclockwise — north and south, then west, then east—and this conflict was overcome. The signal has been operating on automatic control ever since.

This example illustrates one of the main purposes of traffic signal operation, refining the use of the street far beyond anything that is possible without control and also beyond anything that can be done by manual control.

Second Change More Complicated

Our next improvement in signal operation was on Biscayne Boulevard between Ninth and Fifteenth Streets, centering around the circle at Biscayne and Thirteenth, where 63,500 vehicles passed in one 24-hour period. If this intersection could be handled alone, the problem would be relatively easy—take traffic counts, observe vehicle spacings and speeds, and compute and apply the necessary cycle. However, it couldn't be handled that easily, for this is one of many synchronous motor signals along Biscayne Boulevard that had been and should be operated as a flexible progressive control system. It is also one of five signalized intersections within six short blocks. We treated this group as a separate system.

Our computations showed 90-second cycles to be necessary at the controlling intersection of Biscayne Boulevard with Thirteenth Street. The signals both north and south of this system still operated on 60-second cycles, thus placing the two systems in step every other 90-second and every third 60-second cycle. Fortunately, this section was separated from the remainder of the system by some four or five blocks in each direction, within which the effect of the difference in cycles could be absorbed.

Formerly, at the peak hours it had been necessary to have officers operate the signals at Thirteenth, Fourteenth, and Fifteenth Streets to get the traffic through, because the cycle was too short. Now only one man is required in this vicinity and he devotes his time to general supervision of traffic movement and parking.

Later on another part of the signal system on Biscayne Boulevard was reduced to a 40-second cycle because of less traffic; and there, again this system of three signals was sufficiently fram from the others to absorb the change without difficulty.

Another problem on which we have worked quite extensively deals not with the signals themselves but with the organization of traffic in approaching the signals. There are several streets that are too narrow for two lanes of moving traffic in each direction except in the approaches to signalized intersections. At a large number of intersections we have marked two lanes in the approaches with lines painted back about 100 feet from the crosswalks. We find that drivers appreciate this guidance and quite consistently form the two lanes when they are stopped at a red signal. Then, when they start, a single car waiting to make a right or left turn does not obstruct all vehicles.

Of course, by the time the vehicles that go straight through have reached the far side of the intersection they have begun to form a single lane again, but they are fewer by the number of right and left turns made than they were before reaching the intersection. It would be better if the two lanes could be maintained straight though from one intersection to the next, but that isn't possible. Forming two lanes in the approach to each signalized intersection, however, materially shortens the time that it takes for the condensed group of traffic to pass the intersection and, thus, shortens the required cycle materially. In fact, without such control and guidance some intersections could not handle the traffic at all without long delays.

Problems Yet to Be Solved

These illustrations have dealt with operating problems concerning signals that have already been installed. We have some interesting problems concerning possible new installations. Two locations, in particular, deal with normal signal operations that must be tied

From a speech before the International Municipal Signal Association, November 12, 1946, Miami, Fla.

XUM

DUAL

Automatic Parking Meters Set the Pace in PERFORMANCE

DUALS deliver top-notch performance because there's no compromise with *Quality* in building them.

Dual engineers see to that, by constant improvements and developments in engineering, design, and construction.

In the new Duals, every feature sets the pace. They are attractively streamlined (see picture above). They are weather-proof and tamper-proof. They are easy to install and operate—economical to service and maintain. *And their meter movements—the most vital part of any meter—are manufactured by the makers of the famous Seth Thomas clocks.*

Duals earn far more than their "keep"; they pay for themselves—and provide a long-term source of revenue for other municipal services.

Find out how your community can make the same earnings and savings with *quality-built* Duals that scores of other cities do. Write for the informative, free booklet—"Metered Parking". Or call on our engineers for helpful, friendly cooperation.

THE DUAL PARKING METER COMPANY

A subsidiary of The Union Metal Manufacturing Co.
MILFORD BUILDING • CANTON 2, OHIO

WHEN IT COMES TO CONTROLLING PARKING YOU CAN DO IT BETTER WITH **DUALS**

in with other controlling factors, one with frequent bridge openings and the other with a railway grade crossing through the middle of the intersection.

At N. W. Fifth Street and Seventh Avenue there is an irregular four-way intersection immediately adjacent to a bridge. Three of the four approaches, including one across the bridge, carry heavy traffic. Many left turns from the southwest on Fifth Street to the north on Seventh Avenue would have to cut through traffic from the east on Fifth Street if a two-phase cycle were used. So it is evident that a third phase will be necessary to segregate these movements.

While the area of the intersection is large, the actual controlled area can be highly concentrated by islands that will allow right turns to be made back of them.

The complicating factor is the bridge which is open thirty to forty times a day for boats to pass through. Unfortunately, these bridge openings are apt to be at peak when traffic is at peak. To take care of this complication so that traffic will not block the intersection completely when the bridge opens, we propose to have the signals operate on a standard three-phase cycle, either fixed time or traffic actuated, with a supplementary light beyond the bridge timed for progressive movement toward the intersection. Then, when the bridge is about to open, the bridge operator will switch from this standard "stop-and-go" operation to a static indication that will stop all traffic flowing toward the bridge and allow vehicles to flow through the intersection parallel with the river. When the operator closes the bridge for traffic to cross, he will throw the signals back into whatever phase they would be at that time had the bridge not been opened.

Miami has cable-suspended signals throughout the city. These are not desirable, but to change 146 signals from center suspension to corner installations is something that the city is not prepared to do right now. So we are planning to start on a policy of post-mounting new signals and replacements except, possibly, in a limited number of cases in which some other type of installation is preferred.

As we visualize it, the function of traffic control is not merely to alternate the flow of traffic, but much more than that—to refine the use of the street so that our heavily traveled intersections will be better able to handle the vehicles without delay. We depend upon facts gathered concerning traffic volumes, speeds, spacings, and general practices. We try to hold down delays by reducing cycles to the minimum that will handle the peak traffic during the periods which they control.

To the fullest possible extent we want to substitute automatic for manual control wherever we have signals. We are convinced that, when based on properly gathered facts, automatic control can provide more effective and efficient use of the streets during the peak than manual control.

Traffic signal control at its best is a highly technical procedure, subject to greater refinement than almost any other problem in the field of traffic engineering. Its function is to permit the intersection, which itself is a point of serious constriction in street capacity, to handle the traffic in the most effective way possible under existing conditions.

A Good Business District Is a Town's Best Industry

By DAVID LIVINGSTON
President, Central Avenue Business Men's Association
Manager, McCutcheon's Store
East Orange, N. J.

MODERN MERCHANDISING embraces more than attractive stores and goods. It includes traffic improvements that make the business district more accessible, with spaces at the curb and parking lots for business people and long-time parkers. Widening of streets and punching through of dead-end streets are measures which enhance the business district but are often difficult to sell to the municipal government.

Improvements Hindered by Disagreement

This is to be understood when the several factions in almost every town are considered. These factions, moreover, are to a degree intermingled. Most taxpayers want taxes held down. Some taxpayers, however, are far-sighted enough to see that wise improvements tend to draw better trade and new residents who will also pay taxes, thus assuming part of the present tax burden.

Not all merchants in a business district welcome improvements even to their district, fearing higher taxes and rents; but most businessmen would rather pay these increased costs if reasonably assured that more business will be attracted.

Residents in a town naturally protest that a more accessible business-district and better stores and professional men attract out-of-town non-taxpayers. The selling job is to convince enough of these conservatives to permit the local government to plan and carry through improvements that increase the general prosperity and well-being of the community.

East Orange, N. J., has several business districts to serve its 70,000 people and their visitors. The most progressive, at the moment, is Central Avenue, with branches of a dozen famous New York stores.

Through newspaper and billboard advertising, we are trying to draw more customers from within a radius of forty square miles, an area with a population of 170,000. Without adequate traffice improvements, what shall be done with them?—for 60% of them come by automobile. Without adequate off-street space, these cars must be accommodated at the curb.

Parking Meters Make More Curb Space

A year ago parking meters were installed on Central Avenue, as described in THE AMERICAN CITY for December 1945. These have done a great job in opening up space at the curb.

Considerable thought was given to the matter of parking time to be allowed. Motorists must be accorded a reasonable parking period for completing transactions in a given building, but long-time parking defeats the purpose of the meters.

A two-hour limit was established. The second hour is a convenience which not more than 10% of the motorists require.

Not only has our system suited us, but we find it in line with the major purpose of parking meters — to keep cars in circulation, relieve parking con-

These

PRISMO *Lines mean* **SAFETY!**

Prismo white centerline and
Prismo yellow barrier lines

• With the scarcity of white pigments, many users are adopting Prismo yellow Life-Line as their marking material for 1947. The photo, above, shows Prismo yellow Life-Line barrier markings alongside a Prismo white centerline. Immediate deliveries of Prismo yellow Life-Line are being made prior to the springtime marking season.

• For up-to-date deliveries and prices, drop a note to your Prismo distributor, or write Prismo in Huntingdon, Pa. Bulletins are available on: Prismo Life-Line—No. 461; Prismo Municipal Life-Line—No. 746; The Prismo Sign Kit—No. 244.

The SPHERE *of* SAFETY

PRISMO SAFETY CORPORATION

MUNICIPAL DIVISION

HUNTINGDON, PENNSYLVANIA

gestion, and provide spaces to park. The merchant pays high rent for main-street space. He hires clerks to wait on and sell to his customers. He wants them to have ample time to do their shopping or other business on his premises. Afterwards he wants them to drive their cars away, in order to provide space for other customers or clients.

The city commission installed the meters at the request of the businessmen of Central Avenue. Obviously they have been a good investment for the city; the past year's total receipts were $14,962, or $56.24 for each of the meters, but the non-revenue improvements needed are naturally more difficult to obtain. For instance, from the railroad station to Central Avenue is an important access street 1,800 feet long that was laid out 150 years ago. It is 28 feet wide and should be 42 feet wide. It is a fire hazard, in that fire apparatus is likely to have difficulty in getting through, and more traffic accidents occur on this street than anywhere in East Orange. This is only one of a group of physical projects required to open up our business to an increasing volume of trade and to taking care of this trade comfortably.

Many outlying communities have similar problems. Fortunate are those that foresee them in time and are able to take prompt measures.

Public Education Saves Lives in Louisville

INCREASED educational activities have helped Louisville, Ky., to achieve an outstanding traffic safety record this year which, should the trend continue, will be close to the best record in the city's history. In the first nine months of 1945, forty people were killed in accidents, as compared with twenty-seven for the same period in 1946. Of last year's number, twenty-eight were pedestrians; fifteen pedestrians were among the 1946 fatalities.

These figures lead us to believe that pedestrian education is definitely one of the prime requisites for a successful safety program. Laws, enforcement, or control are not a successful attack upon a problem in which ignorance and inability to foresee trouble or to recognize it soon enough are the primary difficulties. The direct attack is through education of the public to safe practices in driving and walking.

Through a joint agreement among Mayor E. Leland Taylor, Col. Joseph A. Murphy, director of safety; Col. Carl E. Heustis, chief of police; and Capt. L. E. Chaudoin, superintendent of traffic, a ten-point safety program was established for the year 1946 to reduce the accident toll for Louisville. The plan included a city-wide educational program throught news releases, pamphlets, radio, and the like, by which public cooperation was sought and obtained.

Pamphlets entitled "Driving Rules for Safety at the Wheel" and "Errors in Walking, or Pedestricide in the Making," were prepared and distributed to Louisville citizens. (Copies are available from the author free upon request.) The first booklet, which was prepared for motorists, depicts in general unsafe driving practices and gives rules for decreasing accidents. The second was issued to point out to pedestrians unsafe walking practices and lists rules for safe walking.

The Louisville Division of Police, in cooperation with the Jefferson County Police and the Kentucky Highway Patrol, sponsored a safety booth at the Kentucky State Fair. Over 30,000 persons visited the booth and received copies of the booklets. They were also guests at the showing of safety films and underwent an intensive eye examination that included tests for visual acuity, depth perception, field of vision, and color discrimination.

Officer IRVIN E. HIBBS
Safety Analyst
Bureau of Traffic
Louisville, Ky.

Restoring Traffic Signals Without Reducing the System

A NUMBER of storm damaged traffic signals in Atlantic City, N. J., have been replaced by fifteen new Crouse-Hinds signals. Joseph S. Milligan, chief of the electrical bureau, made this an opportunity to rehabilitate the entire 175 traffic signals. When the damaged signals had been repaired and painted, they replaced another fifteen that were removed and restored to cleanliness and were then freshly painted.

One of the renovated traffic signals.

Comprehensive Communications for New York State Police

IN THE new state-wide police radio system to be leased by the New York Division of State Police from the New York Telephone Company, General Electric two-way FM radio communications equipment will be used. G-E's electronics department at Syracuse, N. Y., will supply to Western Electric, for later delivery to the telephone company, over fifty 250-watt FM station transmitters, more than 350 FM mobile units for two-way operation, and other associated equipment such as station pick-up receivers, remote control units, and portable trunk-type equipments.

In addition to this radio equipment, the telephone company will provide a comprehensive wire network to control and coordinate the radio transmission. All equipment in any one of a number of zones may be controlled from headquarters in Albany. This network has been especially engineered by the Bell Telephone Laboratories and will require the use of a considerable quantity of both standard and special Western Electric key equipment, amplifiers, and relay control circuits.

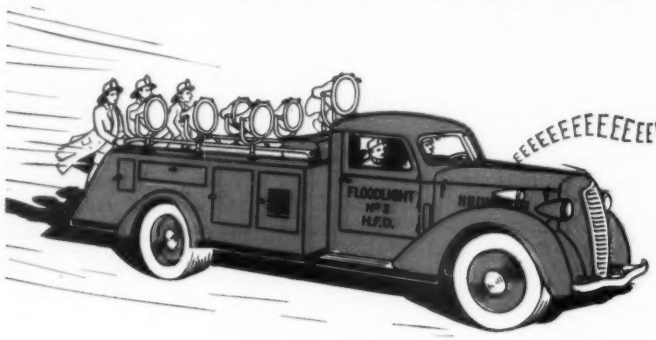
The equipment will be installed and maintained by the telephone company for what is believed to be one of the most extensive interconnected police radio systems ever operated. This will cover state police units throughout New York, and service will be available twenty-four hours a day.

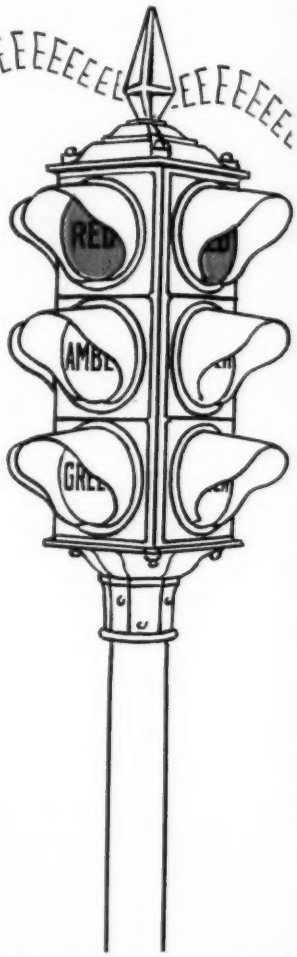
G-E engineers explain that the portable trunk-type radio equipment will make it possible to provide emergency communications headquarters at the scene of floods, disasters, or serious crimes. These sets will have their own gas-driven power supply units.

Walkie-talkie sets will also be a part of the system, so that one trooper can leave a patrol car to investigate a crime and keep in touch with the trooper remaining with the car, or with other patrol units in the vicinity. The system is expected to be in operation next summer.

You can **CLEAR THE WAY** — far ahead of the screaming sirens by merely pressing a button on

CROUSE-HINDS
All-Red Control Cabinet



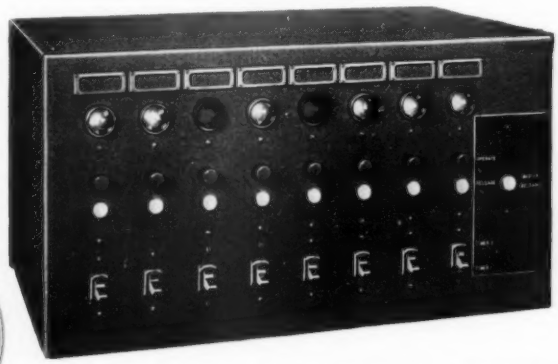


In case of fire or other emergency you can issue stop orders that will be instantly obeyed by hundreds of motorists blocks or even miles away by simply pressing a button on Crouse-Hinds All-Red Control Cabinet. Furthermore, you can issue such orders to any particular area of the city at will, because this remarkable control cabinet is actually a series of selector switches which permit the emergency indication to be placed on various groups of signals.

Each switch may control the signals on one particular street or in one particular area so traffic is only stopped where necessary and the normal traffic flow continues uninterrupted in all other sections of the city. Pilot lights show you which areas are on the all-red.

The all-red indication is automatically ended by a timing relay at the expiration of a pre-determined time.

The cabinet illustrated has separate switches for eight different groups of signals. This system of control is flexible and cabinets can be furnished to accommodate any number of circuits.



Crouse-Hinds Catalog 226 lists a complete line of traffic signals, beacons, flashers, and a series of controllers designed to help you solve your traffic control problems — from simple installations up to the most complex heavy traffic problem. Send for your copy.

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Canton Will Relight for Traffic Safety

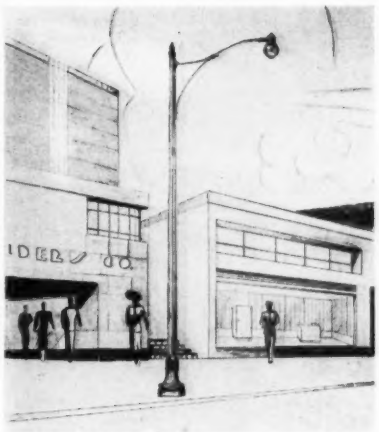
By JUDGE A. C. L. BARTHELMEH
Chairman
Street Lighting Committee
Canton, Ohio

A TEN-YEAR analysis of traffic fatalities in Canton, Ohio, showed that 70% of the fatalities occurred between 6 p.m. and 6 a.m., with the peak at 8-9 p.m. When Traffic Commissioner Chace L. Deerwester pointed out that most fatalities occurred on seven specific streets, the Ohio Power Company was asked to draw up a street lighting proposal for Mayor Carl F. Klein. The program, approved October 1, 1946, will be completed in about a year.

Relighting plans include the business districts and the principal traffic arteries. The lighting in these areas was greatly reduced during the depression, but traffic accidents and fatalities, as well as injuries to both pedestrians and passengers, have since been centered in these areas. The lighting in the less-traveled residential districts has proved adequate from an accident record standpoint. The cost to the city for this increased lighting is estimated not to exceed $11,000 (less than 10% increase in present cost) and will be based entirely on the amount of electricity used. No capital investment by the city is required.

The present system, which is served under a contract expiring May 1, 1949, could provide considerable more illumination if all units were lighted and larger-size lamps utilized as originally intended. However, because of economic considerations, these units were cut to a point at which the system now furnishes the congested areas inadequate protection for current living conditions. Then, too, the design of the units in the present system is such that too much of the light is used to "light the sky" and not the streets. This equipment was the best the manufacturers produced at the time of its installation, but advances in design since that time make it unsuitable for present-day requirements. Therefore, it was thought advisable to take under consideration a plan for a complete new system in the hazardous areas, requiring the installation of modern post equipment and luminaires.

In the business district the standards will comprise the present base with octoflute shafts. The traffic arteries will be provided with complete new standards. On the rest of the streets under consideration, which are outside the business area, the new lights will be mounted on upsweep brackets on wooden poles. Ornamental standards in the business area will be served generally from the underground system and those outside this area will be lighted from overhead.



The new lighting standards will comprise present base with octoflute shafts.

Another type standard to be used in Canton's relighting program is shown.

All new lighting fixtures will be the modern pendant type, mounted on 4-, 6-, and 8-foot ornamental brackets, with the light center located 25 feet above the roadway. These lighting fixtures incorporate the latest features in design and materials, which contribute to high efficiency, scientific distribution of light, shielding of the lamp filament for suppression of objectionable glare, and ornamental appearance.

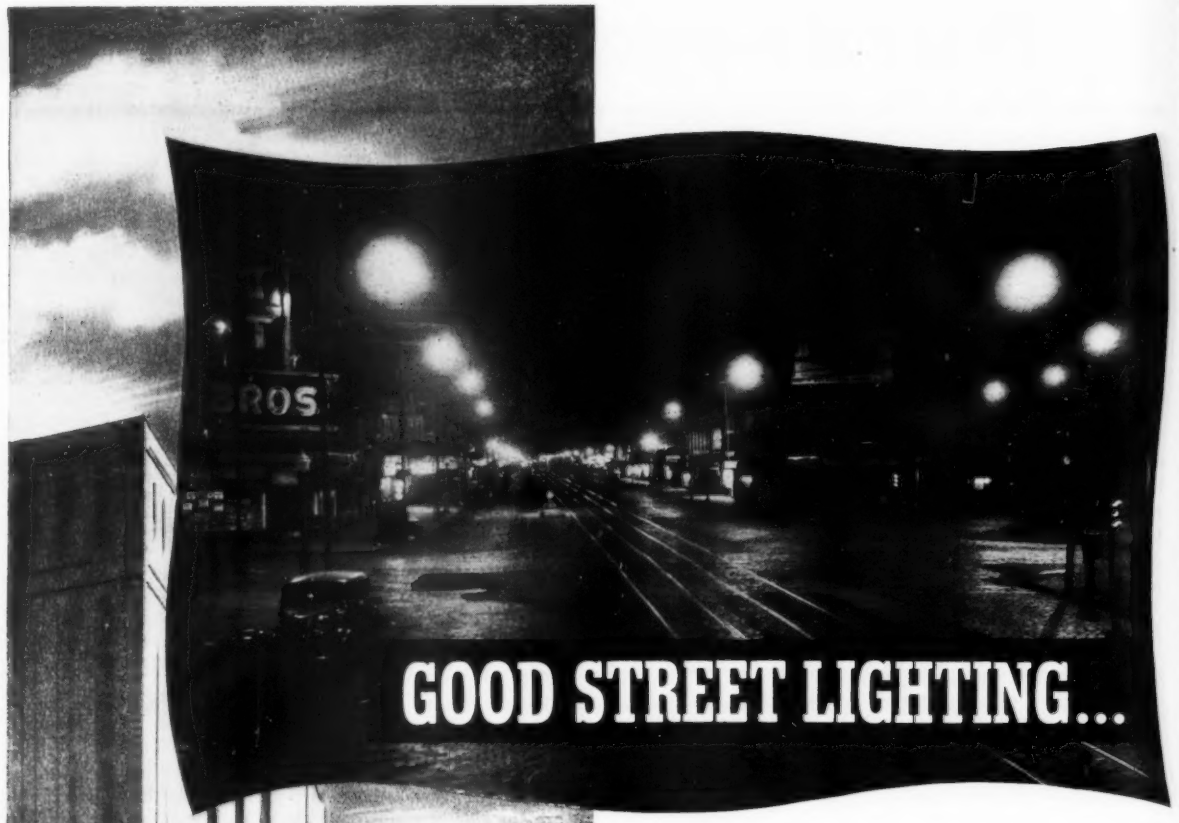
The higher levels of illumination necessary to meet the demand for better visibility that is created by the volume of traffic flow, both vehicular and pedestrian, are obtained by increasing the size of the units, utilizing more efficient equipment, and adding extra standards and equipment where necessary for proper distribution of light. For example: on Tuscarawas Street from the east to the west corporation lines, there are now 179 fixtures in place, delivering a total of 70,250 candlepower. These will be replaced by 233 fixtures for 167,800 candlepower. Being properly distributed and directed with a minimum of glare for sufficient visibility on the street, the effective illumination will actually be considerably greater than is represented by the increase in candlepower of approximately two and one-third times the existing system.

The power company applied the same general study of conditions to the other areas and furnished the city with a tabulation of the details setting forth the recommended changes. Consideration was given to the classification of streets according to function and traffic density, the levels of illumination to meet the requirements, the arrangement of luminaires for distribution, and the direction of the illumination for maximum effectiveness. This project has been engineered to provide adequate lighting with reasonable economy.

The project will result in replacement of 1,254 units in the present system, furnishing 401,400 candlepower, with 1,639 new units furnishing 938,800 candlepower. The estimated cost to the company for such changes is approximately $250,000.

The completed system will total 4,571 lamps producing 1,340,300 candlepower, compared to the present system of 4,186 lamps producing 803,050 candlepower. This means an increase of 9% in the number of lights in the system with an increase of 66% in candlepower for a cost increase of less than 10%.

The work done in Canton affords a good example of what can be accomplished when city officials and civic-



GOOD STREET LIGHTING...

the sign of a good place to live

CHICAGO traffic engineers disclosed, through a city-wide survey seven years ago, that 35 per cent of all traffic fatalities occurred on only 4.4 per cent of the total street mileage. In 1943, the five most dangerous intersections were relighted with modern traffic safety lighting. During the next 12 months total night accidents dropped 37 per cent while total day accidents increased. Was this better street lighting a good investment? Chicago people think so. Right now Chicago is in the midst of a $3,000,000 street lighting modernization program. In addition to saving lives, good street lighting reduces crime and improves real estate values. Is your community realizing all the good from good street lighting?

The Street and Traffic Safety Lighting Bureau, 155 East 44th Street, New York 17, N. Y.

minded citizens work together and study intelligently the problems that arise in every city. The consummation of this program of relighting was the result of the prompt and complete co-operation of the mayor, the city council, and the committee on lighting of Canton's Post-War Planning Council.

A good street lighting system serves every man, woman, and child in the city; it aids police protection, discourages crime and juvenile delinquency; it is a "must" to help produce night traffic safety; and it is an asset to which every citizen of the community can point with pride. It should become more desirable when it is realized the community can have it for less than the price of a two-cent postage stamp per person per week.

Incandescents Replace Arc Lamps in Cincinnati

BECAUSE the arc lamp and its repair parts are no longer being manufactured, Cincinnati, Ohio, is replacing its 5,284 four-ampere, direct-current, luminous arc lamps with incandescent lights over approximately a five-year period.

In general, the arc lights have been spaced on an average of about 400 feet apart. As the incandescent lights are substituted, this spacing will be improved by putting the 600-candlepower units approximately 300 feet apart and the 250-candlepower units about 200 feet apart. These spacings apply to the outlying sections. The main business area is lighted with ornamental boulevard lights, and in the fringes around the main business area the lights are already about 150 feet apart. This type of unit is usually suspended from the existing service poles.

The present circuits will be changed from four-ampere, constant D-C, to 6.6-ampere, constant A-C. The 600-candlepower units give 18.7 lumens per watt and consume approximately 320 watts. The 250-candlepower units give 17.2 lumens per watt and consume approximately 145 watts.

In addition to this change-over of the arc lamps and closer spacing of the units, circuits will be extended into new streets and streets now lighted with gas. Public Utilities Director Edgar Dow Gilman writes "We still have 3,582 60-candlepower gas lamps, a number of which are very satisfactory in such locations as dead-end or 'circle' residence streets. Our plan is to replace 2,500 of the gas lamps with incandescent electric units. We also have quite a number of 100-candlepower tungsten units, which we hope to replace. These were put in during the depression as an emergency measure."

Poor Lighting Branded Worst Traffic Killer

NIGHT-TIME traffic will kill 25,000 people this year—twice the number of the daytime deaths. The Cleveland office of the Street and Traffic Safety Lighting Bureau of New York warns motorists and pedestrians to be particularly alert during the winter months.

Tests sponsored by the bureau in representative cities show that street illumination nationally is far below traffice safety requirements. Cities recently tested included one of two million population, one of one million, one of 300,000, and one of 35,000.

Results of Tests

It was found that illumination of heavily-traveled thoroughfares was scarcely enough to light alleys properly under the 1946 safety lighting code. Other streets, including residential and medium-traffic thoroughfares, had insufficient illumination to register on scientific light-measuring instruments.

The war interrupted widespread street lighting modernization programs which cities and towns throughout the country were demanding in the interests of traffic safety. These relighting programs are just now being actively resumed. Records of relighted sections already show a 50% reduction in fatalities.

Atlantic City Gets Modern Lights

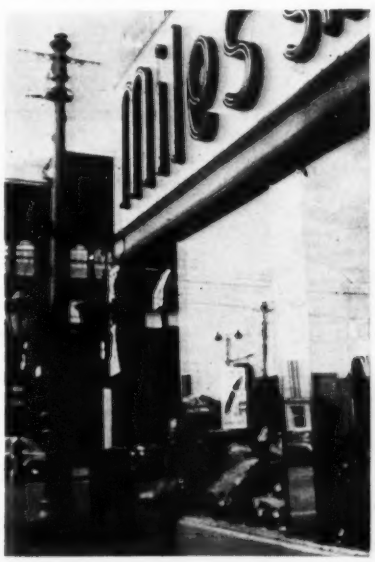
By JOSEPH S. MILLIGAN
Chief of the Electrical Bureau

ALTHOUGH $65,000 has been appropriated for improving the street lighting of Atlantic City, N. J., sufficient steel standards still are unavailable. We decided, nevertheless, to obtain modern lighting without the better daytime appearance that new tapering steel standards, ordered in November 1945, will supply later.

Our first step was to relight the three principal avenues running north and south through the business district. From east to west these are Arctic, Atlantic, and Pacific Avenues. The next one east is the famous boardwalk, fronted by the hotels, which almost constitute a world of their own. The boardwalk connects with the rest of Atlantic City by way of the avenues named for the states and many of their capitals. These will be relighted later.

The Arctic Avenue project already has been completed. Modern pendant sealed-beam luminaires are mounted 25 feet high on 4-foot brackets fastened to wooden electric line poles along one side of the street or the other.

New lights have been temporarily installed on Atlantic Avenue, the main business street, which is 75 feet wide. The old lighting consisted of two 750-watt upright lamps, on double brackets, only 15 feet above street level. The massive iron poles, installed in 1902 at a cost of $990 each, are of the same design as the poles of London, England, that carried oil lamps. Originally 30 feet high, these have been cut down to 25 feet and 6-foot brackets fastened to the top, and pendant luminaires. Five hundred-watt lamps are hung from them. Between the large iron standards on the corners, extensions also have been installed on the small standards within the 475-foot blocks.



One of the 44-year-old standards on Atlantic Avenue now to be replaced.

When new standards are available, these monumental posts will be taken down and new units erected with 6-foot arms at 25 feet mounting height, for a distance of thirty-six blocks. The lights will be staggered about 100 feet apart on both sides of the street. On Pacific Avenue similar lighting will be provided along one side in a manner comparable to that installed on Arctic Avenue.

Why Ask for Accidents in your city?

TRAGEDY STRIKES AGAIN

Taxicab Kills Coed

...ner Dies
...uto Crash
...Y. Daily News
...Car Hits Tree

Hit-Run Auto Ends Big Day

Boyd Foster Jr., 11, of 856 N ... Laramie av., saved ...

Nun Improved After Fatal Taxi Crash

Sister Benedicta, 39, Little Company of Mary order, who was injured in an auto collision that killed another nun and injured ...

Traffic Accident Fatal

3 Dead and 4 Injured As Cars Ram Truck

Autos Plow Into Cargo of Gas; Victims' Bodies Strewn on Road

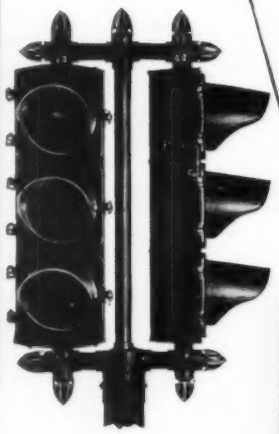
Two men and a woman were killed early today and ... were gravely hurt as two passenger cars ... one after the other into the rear of a ... truck ... other ... badly ... could ...

2 Youths Hurt In Auto Chase

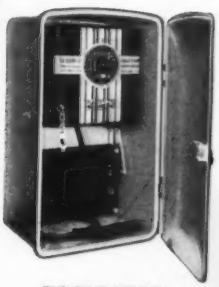
Two youths were in Columbus Memorial Hospital today after a ... that ended their 70-mile-... that night from a police ...

School Youth Killed, 2 Hurt In Truck

Tragedy struck a ... high school student ... ice cream parlor ... in which they were ... over three times, ... and injuring two ... William Levin ... died ...



EAGLE S-23-C
Traffic Signal



EAGLE "EA"
Type Controller

CHECK YOUR TRAFFIC EQUIPMENT

Now is the time to make a thorough check on your traffic requirements and to replace worn and obsolete traffic control equipment. A properly engineered, modern traffic control system will prevent many unnecessary accidents.

New Eagle signals and controllers are available NOW.

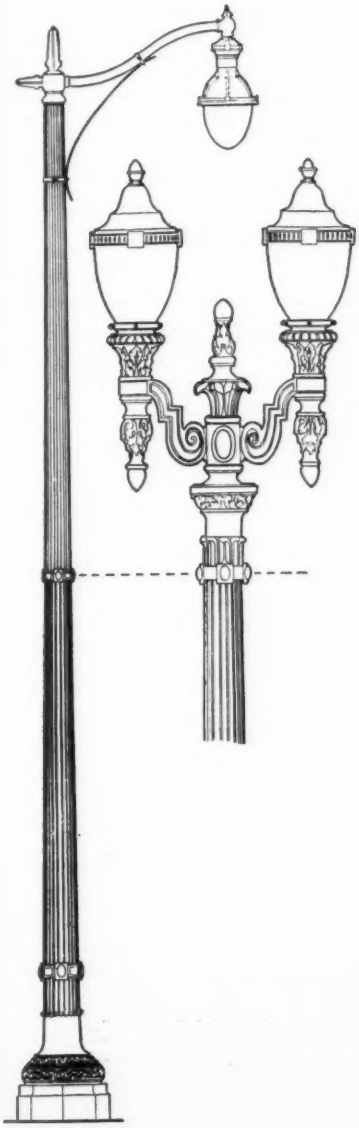
A high accident rate reflects against those responsible for traffic control. Why ask for accidents?

Our engineers are available to assist you with your traffic problems. Write today for further information.

EAGLE Signal Corporation
SAFEGUARDING TRAFFIC FOR OVER 20 YEARS
MOLINE - ILLINOIS

Above and Right: Alhambra's relighted intersections at Main and Almansor Streets and at Main and Electric Ave.

Below: Alhambra's reconverted standard and new pendant unit; the old ornamental lights are also shown.



Accident Toll Reduced at Alhambra Intersections

By W. M. JARRETT
City Engineer and Street Superintendent
Alhambra, Calif.

SINCE the installation of experimental lighting at two of the Main Street intersections in Alhambra, Calif., in June 1945, there has not been a single fatal accident, and only two personal injury accidents have been recorded in these locations. In the preceding year and a half, there were eight traffic accidents, including one fatality, three personal injuries and five collisions resulting in property damage.

The new lighting, designed by S. Lee Collins, city street lighting and traffic signal foreman, working in cooperation with our engineers and Union Metal Company engineers, resulted in an increase of more than four times as much light with the use of only 24,000 lumens as had previously been obtained with 32,000 lumens on these heavily traveled intersections.

The four original standards each carried two ornamental lights of 4,000 lumens at a mounting height of 18 feet. For the reconversion, the fluted metal shaft was cut off at 13 feet 3½ inches, then extended with a matching shaft to give a new mounting height of 24 feet 4 inches for the pendant unit, which is 4 feet out over the street. Each of the new units carries a 6,000-lumen lamp with a prismatic globe and reflector.

In the spring of 1945 Mr. Collins made the first four new lighting units from odds and ends in the city shops. Now, Union Metal is manufacturing these units from Mr. Collins' basic design. Because everything except the top of the old standard can be utilized, the conversion costs approximately $90 per standard. However, there is some salvage value, which will bring this cost down.

The excellent safety results achieved prompt use to extend the new lighting program to every major intersection in the city as rapidly as finances permit. On two of our streets, one a state highway and the other a major thoroughfare, we estimate that it will cost approximately $42,000 to convert a total of 463 original lighting standards for installation of pendant luminaires and increasing mounting height.

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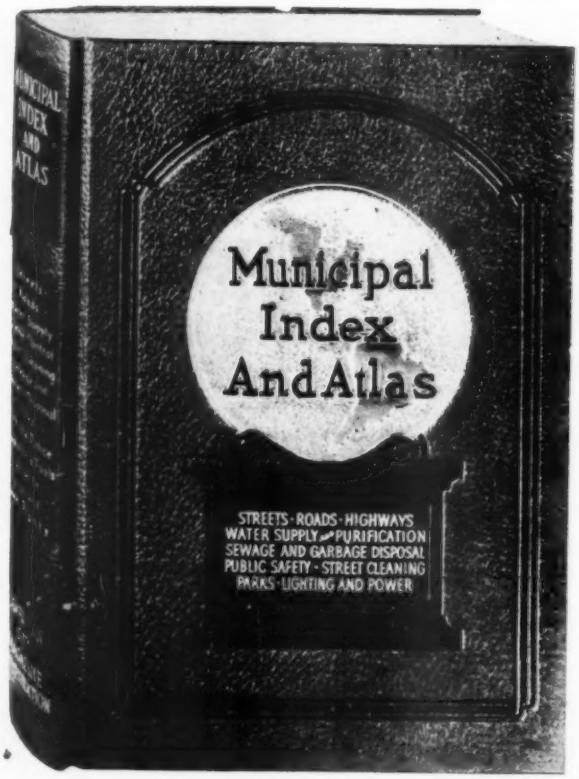
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ZONING and PLANNING NOTES

Edited by
NORMAN WILLIAMS, JR.
with the assistance of
FRANK B. WILLIAMS
and
EDWARD M. BASSETT

"Practical Difficulties and Unnecessary Hardships"

CONNECTICUT.—*Devaney* v. *Board of Zoning Appeals of City of New Haven*, 132 Conn. 537, 45 Atlantic (2d) 828 (Connecticut, January 29, 1946).

One Migliaro purchased a building in the Residence B zone in New Haven for use as a restaurant, with full knowledge of existing zoning restrictions forbidding such use. A variance was sought on the ground of "practical difficulties or unnecessary hardships." The Court held that "practical difficulties" had no separate meaning, but discussed at length the phrase as a whole. It was first recognized that some economic loss and hardship is inevitable under zoning. To constitute "unnecessary hardship," zoning regulations must forbid the only practicable use. Moreover, the proposed use must fit into the general scheme for the area, so that a prohibition would have no real relation to the aims of zoning. However, since in this case the owner bought with full knowledge of the ordinance prohibiting his proposed use, he was taking his chances, and his situation could not be held to involve "unnecessary hardship." See also BASSETT, *Zoning* (2d ed. 1940), 142, 167.

Illinois Urban Redevelopment Law Upheld

ILLINOIS.—*People* ex rel. *Tuohy* v. *City of Chicago*, 68 North Eastern (2d) 761 (Illinois, September 18, 1946).

In this case the Illinois statute for redevelopment of urban blighted areas was upheld. Under the statute, the city could acquire blocks of blighted and slum land, rehabilitate and rebuild the area, and resell it later to private owners. After reviewing the Illinois cases, the Court held that the requirement of "public purpose" for municipal land-acquisition was fulfilled by the rehabilitation of blighted areas, regardless of subsequent disposition of the land. However, since a warning was added that "the city cannot go into the real estate business under the guise of relieving slum conditions," there *may* unfortunately be continued doubts of the constitutionality of a large-scale program of municipal land acquisition in Illinois.

Non-Sectarian School in Residential Zone

NEW JERSEY.—*Lumpkin* v. *Township Committee of Bernards Township*, 48 Atlantic (2d) 798 (New Jersey Sup. Ct., September 9, 1946).

A sixteen-room stone chateau, Norman with Elizabethan wings, was situated on an 160-acre wooded estate, a half-mile to a mile from the nearest buildings. The applicable Residential A zoning regulations expressly allowed churches and any schools connected therewith, and also farming uses, including the raising of chickens and pigs. A refusal of a certificate of occupancy to allow use of the chateau for a non-sectarian private school in these circumstances was held arbitrary and a violation of both the Fourteenth Amendment and the guarantee of natural rights in Article I, Paragraph 1 of the State Constitution.

Skating Rink in Business Zone

NEW JERSEY.—*Piaget-Del Corporation* v. *Kulik*, 133 N. J. Law 485, 45 Atlantic (2d) 125 (Sup. Ct., December 26, 1945); permission to mould pleadings in order to allow appeal refused, 46 Atlantic (2d) 379 (Sup. Ct., April 1, 1946).

The zoning regulations in Clifton prohibited Merry-Go-Rounds, Ferris-Wheels, "or similar amusement," as discordant and out of place in the business zone. A proposed skating rink, even with mechanical music and the possibility of crowds, was held insufficiently similar to be forbidden by the ordinance.

Poultry Market — Straight-Line Measurement of Prescribed Distance

NEW JERSEY.—*Langella* v. *City of Bayonne*, 46 Atlantic (2d) 789 (New Jersey Sup. Ct., May 1, 1946).

A (non-zoning) ordinance forbade a live poultry market within 200 feet of any church, school, library or similar public institution. A proposed new site for a poultry market was within 200 feet of a synagogue by a straight line, but over 200 feet away by the shortest available route accessible to travel. The Court held that, as with similar ordinances involving places selling liquor, a straight-line measurement should be used, and so forbade the proposed use.

"One-Family" Residences

NEW YORK.—*Driscoll* v. *Brunner*, 64 N. Y. Supp. (2d) 161 (Westchester Sup. Ct., November 15, 1945), affirmed by memorandum, 270 App. Div. 1025, 63 N. Y. Supp. (2d) 644 (2d Dept., June 17, 1946).

A house in a one-family residential zone in Harrison had been inhabited for at least ten years by a couple and the families of their three sons, now including thirteen persons in all; but it was run as one housekeeping unit, with a single kitchen and stove, and all the relatives ate together. Formerly friendly neighbors brought this action to enjoin occupancy by more than one family. While admitting the plausibility of such a contention, the Court held that, under the present abnormal housing conditions, there was no violation.

"Wet Wash Laundry"— Launderette Service

NEW YORK.—*Packer* v. *Board of Standards and Appeals of City of New York*, 62 N. Y. Supp. (2d) 54 (Bronx Sup. Ct., May 1, 1946). Affirmed by memorandum, N. Y. L. J., December 21, 1946, page 1839, col. 7.

This case involved the proposed installation of several coin-box washing machines on the first floor of a Bronx business building, where the zoning regulations forbade a "steam or wet wash laundry other than in a hotel or hospital." In an excellent decision Mr. Justice Sheintag noted that the regulation in question appeared in a list of obnoxious trades, mostly nuisances per se, and in the legislative history had been bracketed particularly with auto wrecking yards; and so it was held applicable only to the traditional type of large-scale laundry involving machinery, chemicals, smells, and trucks. A retail self-service "launderette" unit clearly would not involve any of these evils, and the Court held the ordinance not applicable:

> "Labels applied to old processes should not be construed so as to retard the development of new techniques designed for the improvement of living conditions and for the convenience and the welfare of the general public."

In several other large cities—Boston, Philadelphia, Chicago, Dallas, San Francisco, Los Angeles—launderette service has been permitted in business or retail zones by a less literal-minded administrative construction, without recourse to the courts.

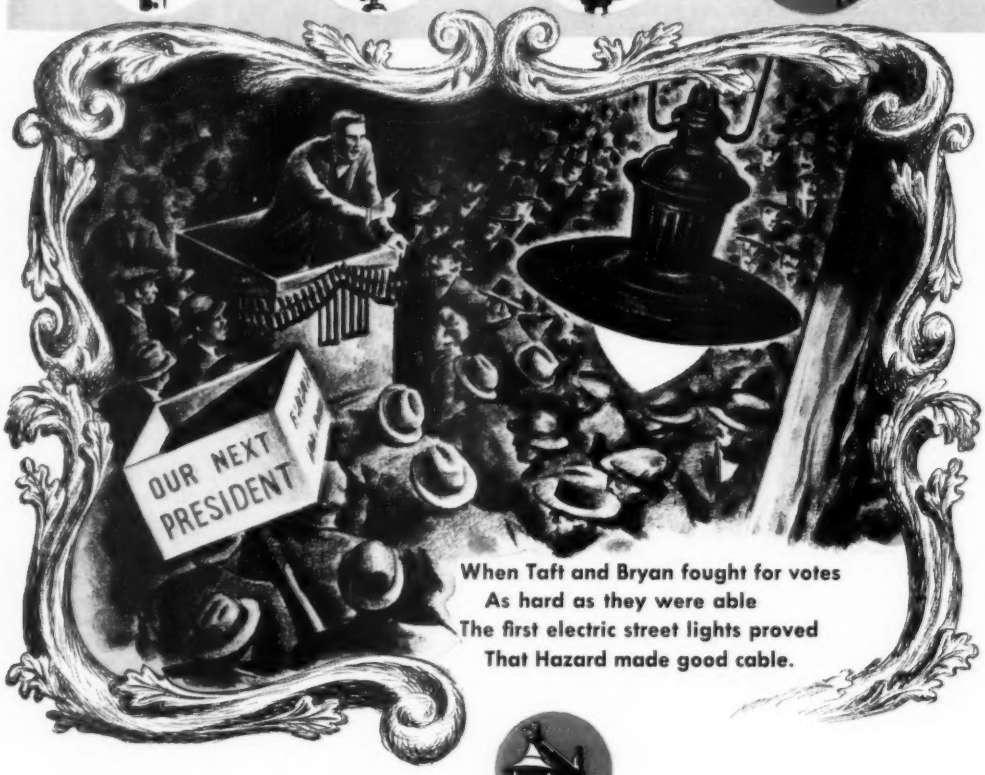
Veterans' Housing — New York

NEW YORK.—*Weitzner* v. *Stichman*, 64 N. Y. Supp. (2d) 40 (Supreme Court, May 28, 1946), reversed in part, 271 App. Div. 255, 64 N. Y. Supp. (2d) 50 (App. Div., 1st Dept., June 28, 1946).

In a program undertaken under the Emergency Housing Act amid wide publicity, the New York State government condemned and took over certain vacant apartments in Long Beach, Long Island.

The Courts upheld, subject to certain limitations, the State's action in taking forty-three of ninety-six apartments in one apartment building, which had normally been kept for summer occupancy only. On public use, the main substantative question, both Courts held that, during the

Hazard cables for street lighting systems



When Taft and Bryan fought for votes
As hard as they were able
The first electric street lights proved
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present housing shortage, the program benefited the whole public and thus met the strictest requirements. The State's action in taking over a fractional part of a single apartment building was also upheld under the statute, although this issue caused a split in the Appellate Division. However, as far as the Court opinions went, the veterans got the apartments without furniture or any guarantee of utility services. The statute did not mention the taking of personal property, so any attempt to include the existing furniture along with the apartments was dropped. An attempt to insure that the owners would not cut off utility services was also apparently abandoned—although the opinions were not too clear on this—evidently to avoid contesting the extraordinary argument that such a requirement would subject the owners to compulsory servitude under the Thirteenth Amendment. Even then the Appellate Division majority was sufficiently impressed with the landlords' plight to grant them an injunction on the latter two points.

Veterans' Housing — Ohio

OHIO.—*City of Columbus* ex rel. *Falter* v. *Columbus Metropolitan Housing Authority*, 67 North Eastern (2d) 338 (Ohio Common Pleas, May 20, 1946), affirmed on opinion of lower court, 68 North Eastern (2d) 108 (Ohio Court of Appeals, June 15, 1946).

Pursuant to a city ordinance, the Columbus Director of Public Service signed a contract with the Columbus Metropolitan Housing Authority for the latter to install, "maintain and operate" 400 temporary veterans' housing units. Under the contract terms, the city would pay for the streets, sidewalks, and utilities for the projects, would liquidate deficits, and would provide for eventual removal of the buildings. The ordinance also appropriated $73,500 for these projects; and the city acquired an 88-acre tract of land for ninety-nine units, and decided to put seventeen more units in an existing park. A taxpayer's action sought to enjoin the program as unauthorized by statute, and as taking land for a private purpose.

In an elaborate opinion, the lower Court held that the Ohio State Housing Law was not limited to slum clearance, but broadly authorized further action (such as, for example, by limited dividend companies) against congestion and insanitary housing conditions. Moreover, several sections of the same law (constituting the Housing Cooperation Law) authorized cooperation with local Housing Authorities in building and operating housing projects within the terms of the federal Lanham Act, and also the same sections authorized construction of streets and utilities.

Conditional Acceptance of Park Land

NEW JERSEY.—*Whipple* v. *Teaneck Township*, 48 Atlantic (2d) 288 (New Jersey Sup. Ct., July 31, 1946).

A four-acre tract of land was deeded, subject to certain conditions, by an elderly couple, to the township, eventually to be used as part of an extensive park development along the Hackensack River. The grantors in particular reserved the right to use the land during their lives, "without the obligation to pay any tax or taxes," and provided for a reversion to their heirs if it should be devoted to any other use except for park, playground, or other recreational purposes. The Township's action in accepting the grant was challenged as illegally granting a tax exemption and as taking land for a private purpose. However, the Court held that the Township could exercise its statutory power to acquire land for parks by contract (as here), subject to certain conditions—such as the life-estate and municipal assumption of the tax liability during that period.

A Warning as to Unlawful Zoning

By EDWARD M. BASSETT

THERE is a great deal of well-justified criticism all over the country against zoning because boards of appeals make changes in the guise of variances. For instance, a board of appeals will authorize a permit for a change of a one-family house in a one-family residence district into a two-family house. Such action is equivalent to making an amendment to the zoning ordinance.

The board of appeals is not a legislative body, and it cannot amend the law. It can do two things to help out property owners and must not go beyond them. It can make variances in cases of *practical difficulty* or *unnecessary hardship*. This does not mean changes. A wise judge in the early days of zoning said it means variations in the *application* of the words of the ordinance. The other place where the board can act is when the ordinance provides specifically for an exception—as, for instance, the provision for exceptions in the New York City ordinance, which states that in a business district the board of appeals may permit a new public garage in a street between two intersecting streets where a garage existed before the ordinance passed.

These two are the only cases where the board can act in a valid manner.

Variances vs. Exceptions

The danger of making changes under the guise of variances arises because the result is bad as well as unlawful. The public hearing on a variance is generally sparsely attended. On the other hand, since a change in the actual words of the ordinance calls out whole neighborhoods, dangerous changes in the ordinance will not slip through so easily as if made as variances by a board of appeals. The city council or the board of trustees (the legislative authority) is more deliberative and usually has a greater feeling of responsibility. Then, too, a variance requires one hearing and one act by the board of appeals, whereas a new *exception* must be preceded by a change in the ordinance made by the legislative authority with its hearing, followed by all the routine of making the specific exception by the board of appeals. I have no hesitation in saying that five times as many permits are granted under the short-cut and dangerous method than is the case where a deliberate exception in the ordinance is passed under which the board of appeals can make lawful permits as exceptions.

Lawyers for municipalities can help to prevent these unlawful practices.

Apartment Houses in Single-Family Districts

I know a town near a large city where in a one-family house residence district a considerable number of apartment houses were newly erected. I noticed that in the apartment district no such buildings were recently constructed. I asked the reason and was told that builders found it more profitable to build apartment houses in one-family districts than in apartment districts. The board of appeals would permit an apartment as a variance, the ordinance not containing any provision for an exception. The town was being permanently injured because it had a poor zoning ordinance.

Although such a permit is unlawful, the building is allowed to stand when erected. Vacant lot owners nearby do not protest because they want to sell for apartments. Owners of private houses are indifferent or do not know that they can prevent it. If provisions allowing exceptions for apartments seem desirable, the ordinance might require two or three times larger lots than otherwise, thus paving the way for garden apartments in proper locations.

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"Escalator" Clauses and Municipal Contracts

By CHARLES S. RHYNE
Executive Director
National Institute of Municipal Law Officers

THE flood of post-war municipal contracts has posed many unique problems for city attorneys, who, as municipal legal officers, are generally required to prepare and pass on the validity of all contracts entered into by their city. This phase of city legal work is so important that the larger city law departments have assistants who specialize in this field. Of primary interest currently, insofar as contracts and municipalities are concerned, has been the validity of the use of the so-called "escalator" clauses in which bidders are protected from rising costs of products and materials. These clauses assured contractors of the benefits of any price increases which might be granted by the Office of Price Administration on the commodity which is the subject of the contract. Now that OPA price controls have been eliminated, the problem of what to do about escalator clauses is all the more serious, because there is no definite standard, such as OPA prices, which can be used as the basis for determining price increases under such clauses.

As in the case of other war-created legal problems, there is little legal authority to guide city attorneys in determining the validity of escalator clauses. No court decision has passed directly on such a clause in a city contract. The chief guides, therefore, are opinions of city attorneys, state attorneys general, and the Comptroller General of the United States. It is believed that these opinions are of sufficient interest and value, however, to collect in this short discussion for the guidance of city officials.

How Some City Attorneys Have Ruled

Certain city attorneys have ruled that contracts containing escalator clauses cannot be entered into by cities for the reason that such contracts are considered indefinite and bids containing such clauses are considered conditional. Other city attorneys have ruled that contracts can contain escalator clauses. The basis for these opinions seems to rest on the theory that an exception to the required definite price must be recognized because the city is otherwise unable to procure the needed supplies and equipment.

The majority view at the moment favors the escalator clause in the light of the great difficulty encountered in securing firm bids for needed services and supplies. The proper theory would appear to be that the processes of competitive bidding and the constitutional, charter, and statutory limitations on municipal contracts should be so relaxed as to permit an uninterrupted flow of essential city supplies, equipment, and materials. If all the bidders compete on the same basis, the primary protections intended by competitive bidding requirements may be achieved. The difficulty, however, in securing certain commodities may well create an emergency justifying a departure from long-standing and recognized principles of competitive bidding in the award of municipal contracts.

The federal government has likewise been faced with the question of escalator clauses in contracts, which has resulted in several rulings by the Comptroller General of the United States. All of the opinions, both local and federal, on this question are discussed hereinafter in more detail.

A Question from Lincoln, Nebr.

Deputy City Attorney Arthur A. Whitworth of Lincoln, Neb., framed a question probably typical with many cities when he recently advised that the use of price escalator clauses in bids submitted by prospective contractors with the city were in apparent conflict with the city's charter. It was pointed out that the city charter provided that before the City Council should enter into any contract or authorize any expenditure involving over $500, the Council should cause an estimate of the total cost thereof to be made and filed together with detailed plans and specifications. This, if approved by the City Council, should be subject to public inspection and the work should be done substantially in accordance therewith. The charter further provided that no contract should be entered into which contained a price exceeding such estimate and, except in cases of emergency, the Council should advertise for bids and cause the amount of such estimate to be published therein. The city found that manufacturers and sellers insisted on the inclusion of a price escalator clause with the resultant possibility that the price which the city would have to pay would exceed the estimate referred to in the charter and would therefore be in violation thereof.

Since this article is being written at a time when city purchasing methods and the use of the escalator clause are virtually in a state of chaos because of the elimination of price controls, it is regrettable that more definite information cannot be given. The information here compiled, though, may serve to stimulate further thinking which may point the way to a solution of the problem. Any comments from any person would be most welcome.

C. S. R.

A Possible Way Out

A suggestion as to how the City of Lincoln might secure acceptable bids and yet not violate the charter provision requiring an estimate of the contract was made by the Secretary of the National Institute of Municipal Law Officers' Committee on Contracts. Secretary Nelson Rosenbaum, Assistant Corporation Counsel, New York City (now resigned to re-enter private practice), suggested that the estimated amount for the contract be increased by a percentage thereof as the outside amount that will be paid for increases in prices. The city should then provide in the escalator clause this same percentage as the maximum amount that will be paid above the original bid price. It was observed that the Department of Purchase of the City of New York uses its own escalator clause and makes it a part of the contract upon which bids will be received, primarily on types of contracts where increases in prices are contemplated by suppliers. Under the New York City clause, there is equality among the bidders and their prices are increased or decreased based on changes in OPA industry-wide ceilings from the date of the bid opening to the date of the specified delivery. These increases in prices are not effected by the vendor but rather by a governmental agency, i. e., the OPA, and are based on an industry-wide change and not on the individual situation of the particular vendor. This idea is considerably weakened now that OPA price controls have been abolished.

With respect to the effect of an escalator clause after the OPA goes out of existence. Mr. Rosenbaum expressed the

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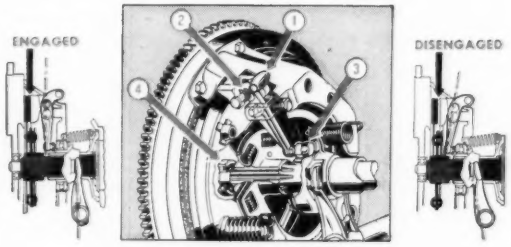

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opinion that there is no method provided for subsequent increases in prices. Upon the death of OPA, such increases in most cases will constitute extra compensation generally prohibited by law. The only manner in which price increases can then be compensated for is the establishment of a reliable index which is definitely fixed to the commodity in question. Of course, the difficulty with this solution is the determination of a reliable index. One case reported by Mr. Whitworth, *McCook* v. *Marsh* 107 Neb. 637, 187 N. W. 84, (1922), upheld a city contract containing a provision that if freight rates upon materials used should advance, the contract price should be accordingly increased, and if lowered, accordingly decreased. That court recognized, however, that any increases in rates would not benefit the contractor. This would indicate that the reasoning would not apply in the present situation of the validity of escalator clauses as any price increase would undoubtedly inure to the benefit of the manufacturers or the sellers.

In the April 14, 1946, issue of *The New York Times* an article pointed out the fact that the Commissioner of Purchases for New York City has bought coal, bond and ledger paper, and fuel oil for many years under contracts and purchase orders containing escalator clauses. These purchases include provisions for price increases as well as decreases, it was reported.

Two Opinions from Cleveland

On April 23, 1946, Chief Counsel Joseph H. Crowley of Cleveland Ohio, rendered an opinion to the Commissioner of Purchases and Supplies of his city that any stipulation made by a bidder in a proposal attempting to bind the city to pay the OPA maximum price renders such bid invalid as a conditional bid. With respect to escalator clauses, Mr. Crowley stated:

"Recently there has developed in private business the use of a device known as the 'escalator clause', which provides in effect that if by reason of increased labor or material costs the cost to the vendor is increased beyond that at the time of entering into a contract, he shall be entitled to adjust his prices upward to reflect such increase, and correspondingly if his costs are decreased by reason of lower labor or material costs, to adjust his prices to the city accordingly. Obviously this device is subject to all of the infirmities of any other attempt to meet future conditions, in that it renders a bid uncertain, indefinite, and conditional. However, it does have a greater measure of fairness than a mere upward adjustment of price. It is also subject to the criticism that it destroys competitive bidding by permitting the vendor to write his own specifications at least to the extent of the method of computing the price bid. . . . .

"It has been suggested that a form of 'escalator clause' be written into the specifications during this period of uncertain prices. This is an admission that free and full competition is impossible, and, in my opinion, municipal officers are not at liberty to make such conjectures, but must ascertain the fact by taking bids in the usual charter and ordinance methods. When as a result of such methods, no bids can be obtained, then such a clause may properly be incorporated in the specifications. However, no award may be made as a result of such conditional bids unless and until the council shall have authorized by ordinance the award to the lowest responsible bidder, which ordinance must recite the procedure had and determine that competitive bidding in full compliance with the charter and ordinances cannot be obtained."

In an opinion dated May 7, 1946, the Comptroller General of the United States, in expressly ruling on the validity of escalator clauses in governmental contracts, held that a contractor who agreed to furnish steel to the government between certain dates was entitled to receive payment of the ceiling price at the time of actual delivery, even though such time was several months after the stipulated delivery time. The contract provided that the government would pay the ceiling price at the time of delivery, and a rider was attached to each quotation that the time of delivery was not guaranteed. The opinion further pointed out that the right of the government to terminate the contract in the event of delay in delivery did not alter the conclusion, since the government did not exercise this reserved right but, rather, accepted the materials after the effective date of the revised price ceilings.

In another opinion by Mr. Crowley, dated June 14, 1946, also to the Commissioner of Purchases and Supplies, it was noted that the present unsettled economic condition of the labor and material market would render it most difficult to obtain firm bids for vitally needed supplies of the city and that escalator clauses should be inserted in all specifications upon which the city seeks bids in view of such conditions. The opinion points out that the requirements that bids be responsive to the specifications and that each bidder must be placed upon an equality in bidding would not be violated. Mr. Crowley, writing when price controls were still in effect, suggested that the following clause be used:

"By reason of the present state of uncertain and fluctuating costs of labor and materials the bidder, at his option, may provide in his proposal that the prices bid shall be subject to adjustment, based upon an approved method of computation set forth by the bidder, reflecting the increase or decrease, if any, in the cost of material and labor, or both, between the date of the proposal and the date of delivery. Such adjustment shall be limited to the maximum set forth in the proposal and capable of determination for the purposes of arriving at the lowest responsible bid, and shall not in any event increase the contract price beyond the applicable maximum price established by the Office of Price Administration and in effect at the date of delivery. Payment for increase or credit for decrease in the contract price, except in the case of requirement contracts, shall be deferred until the time for final payment under the terms of the contract."

Other Opinions

The City of Pasadena, Calif., has advanced a solution in the form of a price adjustment clause which has proved acceptable to many bidders, City Attorney H. Burton Noble reports. Mr. Noble states that since the first of the year the city has received bids in connection with several million dollars of work for the municipal light and power plant. At the outset, it was obvious that the bidders were uninterested in bidding a firm price for equipment that would take as long as two years to make, in view of the risk assumed because of the uncertain economic situation. In order to cover such a contingency, the city prepared a price adjustment clause which permits all bidders to quote on an equal basis. The Pasadena clause is set forth in full on page 76 of the August, 1946, issue of the *Muncipal Law Journal*. In so far as the desire of bidders to make price adjustments on the basis of increases in special labor cost of the particular bidder was concerned, Mr. Noble explained that such an adjustment is not acceptable because there is no standard applicable to all.

In another opinion by the Comptroller General of the United States, it was held on July 31, 1946, that government procurement officers could accept bids containing escalator clauses and in view of the absence of any applicable statutes or regulations prescribing specific wording for such clauses, they must be made to satisfy the requirements of each particular contract.

On July 8, 1946, the Attorney General of Minnesota held that a contract containing an escalator clause for the construction of public building may be used only if properly restricted so as to limit the liability of the public agency. This theory would appear to be in accord with the original suggestion made by Mr. Rosenbaum to Mr. Whitworth of Lincoln, Neb.

Week-Long Celebration Stimulates Civic Consciousness

AN OPPORTUNITY for St. Louis, Mo., residents to pause and take inventory of the city's assets was provided in November when the Civic Development Committee of the Chamber of Commerce sponsored a "St. Louis Week," which was proclaimed by the mayor to commemorate the 137th anniversary of the city's incorporation.

Throughout the city, in its public buildings, educational institutions, libraries, museums, historical societies, and industrial establishments, a wide range of exhibits was on display during the week, all of which were planned to give St. Louisans an over-all view of their city and help them understand some of the cultural, spiritual, and economic progress which the city has made. The newspapers cooperated by devoting special sections to the event.

The first St. Louis Week was so successful in helping to portray the activities of the city's institutions that it will become an annual affair. The celebration is expected to become larger in scope each year.

A. P. Greensfelder, chairman of the Civic Development Committee which sponsored the celebration, indicated during his talk at the conclusion of the week's activities the important role of the Chamber of Commerce in maintaining an active interest in civic development, which he defined as the growth of "an adequate civic consciousness to demand the wants and supply the will-power to provide municipal betterments currently requisite in a progressive community."

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Conventions

When and Where

Conventions listed this month for the first time are indicated by an asterisk (*)

Jan. 17—New York, N. Y.
AMERICAN WATER WORKS ASSOCIATION—NEW YORK SECTION. Midwinter Lunch Meeting (Commodore Hotel). Sec.-Treas., R. K. Blanchard, 50 W. 50 St., New York 20, N. Y.

Jan. 17—New York, N. Y.
NEW YORK STATE SEWAGE WORKS ASSOCIATION. Annual Meeting (Henry Hudson Hotel). Sec.-Treas., A. F. Dappert, State Dept. of Health, Albany, N. Y.

Jan 18-19—Providence, R. I.
AMERICAN INSTITUTE OF PLANNERS. Annual meeting (Hotel Biltmore). Exec. Sec., Draveaux Bender, 77 Massachusetts Ave., Cambridge 39, Mass.

Jan. 20-22—Washington, D. C.
UNITED STATES CONFERENCE OF MAYORS.. Annual Conference (Hotel Statler). Exec. Dir., Paul V. Betters, 730 Jackson Pl., Washington, D. C.

Jan. 27-30—Chicago, Ill.
ASSOCIATED GENERAL CONTRACTORS OF AMERICA, INC. Annual Convention (Hotel Stevens). H. E. Forman, 1227 Munsey Bldg., Washington, D. C.

Feb. 3-6—Lafayette, Ind.
PURDUE SCHOOL OF CIVIL ENGINEERING. Annual Road School (Memorial Union Bldg. and Armory). Ben. H. Petty, Prof. Highway Engineering, Purdue University, Lafayette, Ind.

Feb. 10-13—College Station, Texas
TEXAS WATER WORKS AND SEWERAGE SHORT SCHOOL. Annual Meeing (Texas A. & M. College). Sec., V. M. Ehler, Austin ,Texas.

Feb. 11-14—St. Louis, Mo.
COMMUNITY CHESTS AND COUNCILS, INC. Annual Convention (Hotel Statler). Exec. Dir., Ralph K. Blanchard, 55 E. 44 St., New York.

***Feb. 13-15—Chicago, Ill.**
ASSOCIATED EQUIPMENT DISTRIBUTORS. Annual Meeting (Edgewater Beach Hotel). Exec. Sec., C. W. Winchester, 1928 Eye St. NW, Washington, D. C.

***Feb. 17-18—Chicago, Ill.**
ASSOCIATION OF ASPHALT PAVING TECHNOLOGISTS. Annual Meeting and Technical Sessions (Stevens Hotel). Sec.-Treas., W. J. Emmons, University of Michigan, Ann Arbor, Mich.

Feb. 17-20—Chicago, Ill.
AMERICAN ROAD BUILDERS' ASSOCIATION. Annual Convention (Palmer House). Engr.-Dir., C. M. Upham, 1319 F St., NW, Washington.

Feb. 20—New Brunswick, N. J.
AMERICAN WATER WORKS ASSOCIATION—NEW JERSEY SECTION. Winter Meeting (Hotel Roger Smith). Sec., C. B. Tygert, Box 178, Newark.

***Feb. 23-26—St. Louis, Mo.**
AMERICAN CONCRETE PIPE ASSOCIATION. Annual Convention (Hotel Statler). Managing Director, H. F. Peckworth, 226 N. La Salle St., Chicago, Ill.

Feb. 25-27—Grand Rapids, Mich.
CONFERENCE ON HIGHWAY ENGINEERING. Annual Meeting (Pantlind Hotel). Sec., R. L. Morrison, University of Michigan, Ann Arbor, Mich.

***Feb. 26-28—Atlantic City, N. J.**
ASSOCIATION OF HIGHWAY OFFICIALS OF NORTH ATLANTIC STATES. Annual Meeting and Convention (Hotel Traymore). Sec.-Treas., A. L. Grover, State Highway Dept., Trenton, N. J.

***Feb. 28-Mar.1—Harrisburg, Pa.**
PENNSYLVANIA STATE ASSOCIATION OF BOROUGHS. Annual Convention (Penn-Harris Hotel). Pres., T. F. Chrostwaite, Hanover, Pa.

***Mar. 13-14—Wichita, Kans.**
AMERICAN WATER WORKS ASSOCIATION—KANSAS SECTION, AND KANSAS SEWAGE WORKS ASSOCIATION. Annual Meeting (Hotel Broadview). Sec.-Treas., Paul D. Haney, State Board of Health, Lawrence, Kans.

***Mar. 13-15—St. Paul, Minn.**
AMERICAN WATER WORKS ASSOCIATION—MINNESOTA SECTION. Annual Conference (Lowry Hotel). Sec.-Treas., R. M. Finch, 416 Flour Exchange, Minneapolis 15, Minn.

***Mar. 19-21—Trenton, N. J.**
NEW JERSEY SEWAGE WORKS ASSOCIATION. Annual Meeting (Stacy-Trent Hotel). Sec.-Treas., M. S. Kachorsky, Box 283, Manville.

***Mar. 31-April 2—Chicago, Ill.**
MIDWEST POWER CONFERENCE. Annual Conference (Palmer House). Conference Director, S. S. Winston, Evening Division, Illinois Institute of Technology, Chicago, Ill.

***April 10-11—Buffalo, N. Y.**
AMERICAN WATER WORKS ASSOCIATION—NEW YORK SECTION. Spring Meeting (Hotel Statler). Sec.-Treas., R. K. Blanchard, 50 W. 50 St., New York 20, N. Y.

***April 13-19—San Francisco, Calif.**
NATIONAL CONFERENCE OF SOCIAL WORK. Annual Meeting (Civic Auditorium). Gen. Sec., Howard R. Knight, 82 N. High St., Columbus 15, Ohio.

***April 14-16—Fayetteville, Ark.**
ARKANSAS WATER AND SEWAGE WORKS CONFERENCE. Annual Conference (Engineering Building). Sec., Harrison Hale, University of Arkansas, Fayetteville, Ark.

***April 14-16—Montreal, Canada**
AMERICAN WATER WORKS ASSOCIATION—CANADIAN SECTION. Annual Convention (Mount Royal Hotel). Sec., Dr. A. E. Berry, Ontario Dept. of Health, Parliament Bldg., Toronto, Ontario.

***April 17-18—Chicago, Ill.**
AMERICAN WATER WORKS ASSOCIATION—ILLINOIS SECTION. Spring Meeting (Congress Hotel). Sec.-Treas., H. A. Tolburg, 2020 S. Fifth St., Springfield, Ill.

***April 23-24—Havre, Mont.**
MONTANA SEWAGE WORKS ASSOCIATION. Annual Meeting (Havre Hotel). Sec.-Treas., H. B. Foote, State Board of Health, Helena, Mont.

***April 25-26—Havre, Mont.**
AMERICAN WATER WORKS ASSOCIATION—MONTANA SECTION. Annual Meeting. Sec., C. W. Brinck, State Board of Health, Helena.

***April 28-30—Milwaukee, Wis.**
AMERICAN PLANNING AND CIVIC ASSOCIATION. Citizens Conference on Planning (Hotel Pfister). Exec. Sec., Miss Harlean James, 901 Union Trust Bldg., Washington, D. C.

***April 28-May 1—Washington, D. C.**
CHAMBER OF COMMERCE OF THE UNITED STATES. Annual Meeting (Chamber of Commerce Building). Gen. Mgr., Ralph Bradford, 1615 H St. NW, Washington, D. C.

***May 15-16—Port Angeles,, Wash.**
ASSOCIATION OF WASHINGTON CITIES. Annual Meeting. Acting Sec., Joshua H. Vogel, University of Washington, Seattle, Wash.

***May 18-20—Philadelphia, Pa.**
PENNSYLVANIA STATE ASSOCIATION OF TOWNSHIP COMMISSIONERS. Annual Conference (Benjamin Franklin Hotel). Sec., H. A. Fritschman, Havertown, Pa.

***May 21-22—Lafayette, Ind.**
INDUSTRIAL WASTE UTILIZATION CONFERENCE. Annual Conference (Purdue Memorial Union Building). Chairman, D. E. Bloodgood, Purdue University School of Engineering, Lafayette, Ind.

***May 26-27—Albany, N. Y.**
NEW ENGLAND SEWAGE WORKS ASSOCIATION. Joint Spring Meeting with NEW YORK SEWAGE WORKS ASSOCIATION (Hotel Ten Eyck). Sec.-Treas., W. E. Merrill, 511A State House, Boston, Mass.

***May 26-29—Chicago, Ill.**
NATIONAL FIRE PROTECTION ASSOCIATION. Annual Meeting. (Palmer House). Managing Director, Percy Bugbee, 60 Batterymarch St., Boston, Mass.

***June 4-6—Saratoga Springs, N. Y.**
NEW YORK STATE ASSOCIATION OF CITY AND VILLAGE CLERKS. Annual Meeting. Sec., B. Nedd Sparks, Tupper Lake, N. Y.

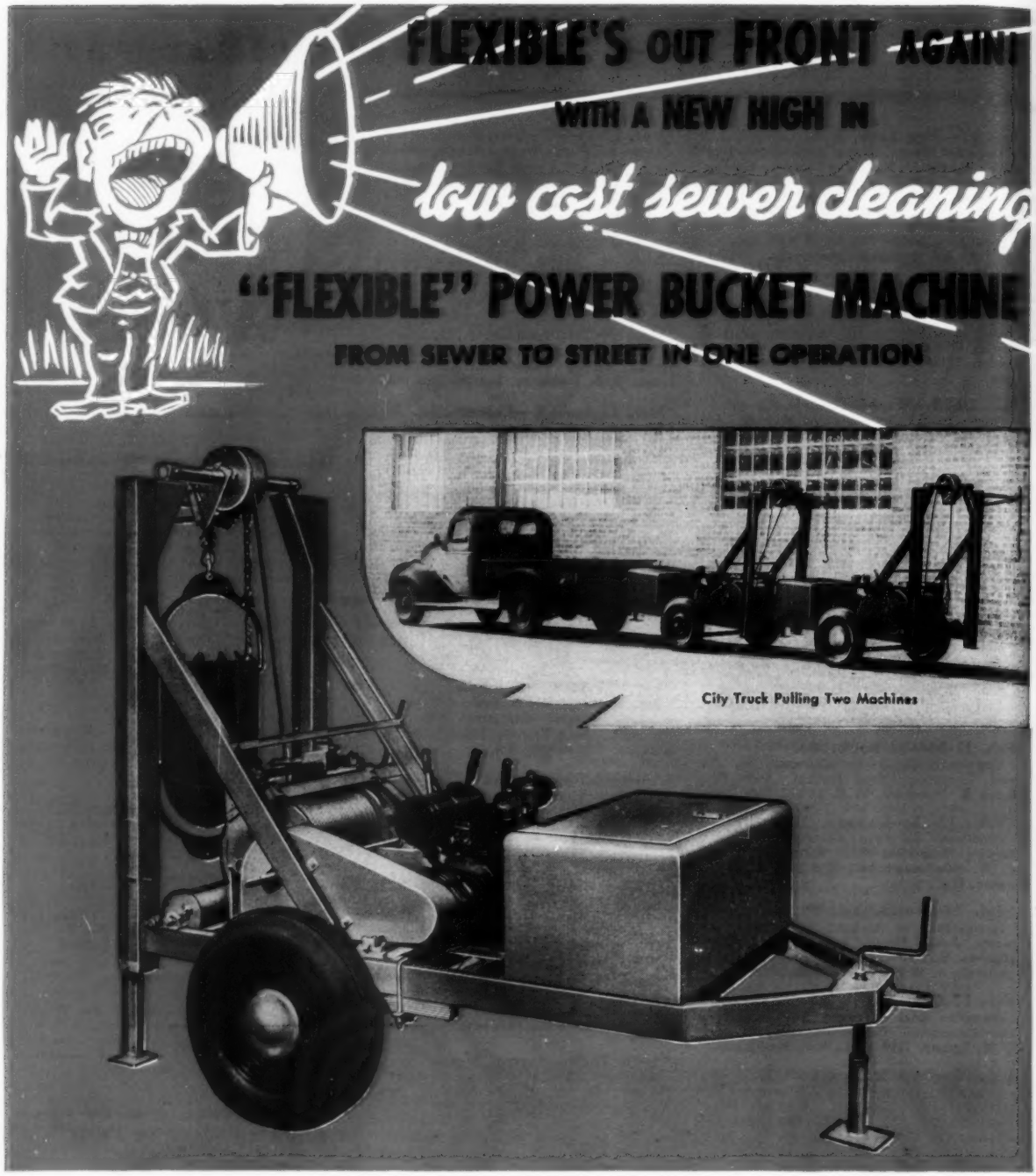
***July 8-11—Winnipeg, Canada**
CANADIAN FEDERATION OF MAYORS AND MUNICIPALITIES. Annual Conference (Hotel Royal Alexandria). Exec. Director, Miss J. Allan, Mount Royal Hotel, Montreal, Quebec.

***July 21-25—San Francisco, Calif.**
AMERICAN WATER WORKS ASSOCIATION AND THE FEDERATION OF SEWAGE WORKS ASSOCIATIONS. Annual Conference. Sec., A.W.W.A., H. E. Jordan, 500 Fifth Ave., New York, N. Y. Sec., F.S.W.A., W. H. Wisely, 325-26 Illinois Bldg., Champaign, Ill.

International Congress of Cities to Meet in Paris

THE International Union of Local Authorities has been revived under the leadership of its able pre-war director, Senator Vinck of Belgium, with headquarters in Brussels. Plans are being perfected for an International Congress of Cities to be held during the first half of June 1947.

Full details are not available as this issue of THE AMERICAN CITY goes to press, but may be secured, when plans are completed, from Earl D. Mallery, executive director of the American Municipal Association, 1313 East 60 Street, Chicago 37, Ill.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WITH A NEW HIGH IN
low cost sewer cleaning
"FLEXIBLE" POWER BUCKET MACHINE
FROM SEWER TO STREET IN ONE OPERATION
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Pulls the clam-type bucket up to the load, then brings the loaded bucket back up to street level for dumping—SAFELY, at a speed of up to 125 feet per minute. No manholes to muck out!
Drums hold up to 1,000 feet of ½" cable. Seven sizes clam-type buckets—powerful 7.7 motor-automatic safety clutch—power clutch—fool proof cable winder. Write for complete catalog today—

FLEXIBLE SEWER-ROD EQUIPMENT COMPANY

9059 Venice Boulevard, Los Angeles, Calif.

New Publications

Airport Planning

AIRPORTS: DESIGN, CONSTRUCTION AND MANAGEMENT.—*By Horace K. Glidden, Hervey Fuller Law, and John E. Cowles. McGraw-Hill Book Co., 330 W. 42 St., New York 18, N. Y. 582 pp. Appendix.* $7.00.

A book designed to cover the entire range of airports from their planning stage to their operation. It discusses the role that the federal government plays in the field, outlines requirements and factors entering into a selection of sites, covers good practice in design and construction, gives information on airport lighting, and has a thorough chapter on management. The book will be of particular value to engineers studying airport problems and will be useful to anyone facing airport problems.

Express Highway Report

REPORT ON EXPRESS HIGHWAYS THROUGH AND BETWEEN THE CITIES OF RICHMOND AND PETERSBURG, VA.—*Prepared for the Department of Highways of the Commonwealth of Virginia. R. Stuart Royer and Consoer, Townsend and Associates, Consulting Engineers, Richmond, Va. 1946. Maps. 72 pp.*

An elaborate, expensive report containing many maps, photographs, and sketch recommendations. The report states that the large savings in time, lessened cost of vehicle operation, reduction of accidents, and other advantages, which accrue from the use of express facilities, will have a benefit value greater than the cost of the recommended highways.

Parking Study

DETROIT'S PARKING NEEDS—CENTRAL BUSINESS DISTRICT.—*Traffic Engineering Bureau, City of Detroit. 1946. 17 pp.*

The report was issued as an aid to public officials, governmental agencies, and business groups concerned with parking needs in the Detroit Central Business District and with the planning of measures to combat the parking problem. It reaches very specific conclusions as to the number of parking spaces that should be provided in the city.

Of special interest in the report is the unusual and effective method of showing parking statistics by means of dotted maps.

New Orleans Traffic Survey

A TRAFFIC SURVEY—NEW ORLEANS METROPOLITAN AREA 1944-45.—*Louisiana Department of Highways in cooperation with Public Roads Administration and the City of New Orleans. 93 pp.*

This survey is based on home interviews and is among the first of this type conducted in the United States. Each tenth dwelling unit in New Orleans was selected for interview. The addresses were assigned to trained workers, who interviewed residents and obtained from those five years of age or older, information on the actual travel performed on the week day preceding the call. Traffic counts were also used.

The result is a traffic and parking survey to end all traffic and parking surveys. The maps, meticulously prepared in three or four colors, cover every possible phase of information that might be useful to persons interested in the nature and amount of New Orleans traffic.

ARTERIAL PLAN FOR NEW ORLEANS.—*Robert Moses, Director; Andrews and Clark, Consulting Engineers, 1 E. 57 St., New York, N. Y. 1946. 35 pp.*

Another traffic report consisting of recommendations for elevated expressways, limited access highways, parking garages, and a bridge.

It is emphasized in the report that the consultants bear no responsibility for carrying out the findings. The publication is expensively prepared, with several excellent multi-colored maps.

New Model Traffic Ordinance

MODEL TRAFFIC ORDINANCE.—*Public Roads Administration, Federal Works Agency. Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. 1946. 34 pp.* 10 *cents.*

The National Conference on Street and Highway Safety revised and approved this ordinance at its 1946 meeting. The code has been made flexible and includes provisions to cover local needs in harmony with state laws.

It is emphasized in the code that traffic authorities should be given considerable latitude in establishing traffic control. Experience has shown that where too many details must be considered by the city council valuable time of that body is consumed and its members are forced to pass upon technical questions outside of their experience.

Parking Legislation Study

AN ANALYSIS OF GENERAL STATE ENABLING LEGISLATION DEALING WITH AUTOMOBILE PARKING FACILITIES.—*Bulletin No. 2, Highway Research Board, Division of Engineering and Industrial Research, National Research Council, Washington 25, D. C. 1946. Tables. 88 pp.*

Municipalities with congested street systems caused by inadequate parking spaces will be grateful for the tentative draft of a model bill in this bulletin for a state general enabling statute providing for automobile parking facilities.

The bulletin calls attention to the fact that one of the principal barriers to better parking has been the inadequacy of the legal and administrative machinery provided to do the job, and that improved statutes could be a most important factor in the solution of the parking problem.

Traffic Conference

PROCEEDINGS OF THE THIRD NEW ENGLAND TRAFFIC ENGINEERING CONFERENCE.—*Edited and published by the National Conservation Bureau, Association of Casualty and Surety Executives, 60 John St., New York 7, N. Y. 1946. 64 pp.*

These proceedings of the conference held in June at Massachusetts Institute of Technology include papers on pedestrian protection, surveys for urban planning, planning for city transit, effective approach to parking, attacking the traffic problem, holding the line on accidents, coordination design of standards, traffic planning, and parking surveys.

Federal Reserve Monographs

HOUSING, SOCIAL SECURITY, AND PUBLIC WORKS.—*Monographs by Ramsey Wood, Eliot J. Swan, and Walter F. Stettner. Postwar Economic Studies No. 6, June 1946, Board of Governors of the Federal Reserve System, Washington, D. C. 94 pp.* 25 *cents.*

The three monographs in this booklet represent a great deal of constructive and forward-looking thinking on these longer-term problems of our economy. Current developments and needed improvements in the housing, social security, and public works programs are critically examined.

In the preface, it is explained that central bank operations reflect, to some extent, all the phases of a nation's economic life and, in turn, all parts of the economy are influenced by central banking policies. In order to have current information and understanding about all of the economic problems with which the country is confronted, the Federal System has had staffs of economists engaged in the task of collecting, coordinating, and interpreting data that throw light on the economic activities of the country, with special reference to their bearing on credit and monetary policies.

Municipal *and* Civic

Housing Analyzed

THE FUTURE OF HOUSING.—*By Charles Abrams. Harper and Bros., 49 E. 33 St., New York 16, N. Y. 1946. 428 pp.* $5.00.

Mincing no words and sparing no criticism of current real estate, home building, and financing practices, the author of *Revolution in Land* has succeeded in throwing much light upon the complicated subject of why the country today has such a desperate shortage of good housing. It is, certainly, the most comprehensive and up-to-date study available on the housing problem; and, at the same time, it is both stimulating and thought-provoking.

City officials will find much to interest them in the book. Mr. Abrams reveals the dangers which exist in the present methods of real estate taxation. He points out the significance of the more than eight hundred municipal housing authorities and their place in the housing picture. Considerable attention is devoted to the threats which loom in some urban redevelopment state statutes—especially those contained in the granting of public powers to private enterprise and the implications of some of the tax-exemption benefits for certain projects.

"City Planning," Mr. Abrams declares, "cannot become effective until the city itself participates in planning, building where building is needed, zoning effectively where zoning is needed, buying land and reselling it to encourage or round out intelligent development."

Changing Role of Counties

THE AMERICAN COUNTY — PATCHWORK OF BOARDS.—*By Edward W. Weidner, National Municipal League, 299 Broadway, New York 7, N. Y. 1946. 35 cents.*

This pamphlet, which consists of three articles originally published in the *National Municipal Review*, sheds much light on what counties are doing and what progress they are making.

The contents include sections on county organization, special function boards and commissions, and the new roles and changing responsibilities and powers of counties. Specific recommendations are made as to how counties can and should be reorganized.

An excellent selected bibliography on county government is included.

Model Civil Service Law

A MODEL CIVIL SERVICE LAW.—*Prepared and published by the National Civil Service League, Civil Service Assembly of United States and Canada, and National Municipal League. 1946. 23 pp.* 50 *cents.*

This draft of a law is intended as a guide for state legislatures and other agencies interested in the adoption of sound principles of personnel administration. It is generally adaptable to the needs of any state, and also to those of a county or city, with such modifications as may be necessary to fit it into the existing constitutional and statutory framework of government.

It is hoped that the model law may serve as an aid to revision of those laws which have been found inadequate or unworkable and that it will encourage uniformity of state laws.

NO MORE BEING TRAPPED on an upper floor of a burning building!

"Wake up, America!" Think of the lives that might have been saved in such holocausts as that at the Winecoff Hotel in Atlanta and the LaSalle Hotel in Chicago if an EVACUATOR had been rushed to the scene!

The EVACUATOR would have affected SAFE, SPEEDY rescue—

SAFE—because descent in this fire-resistant canvas duck chute would not have been cut off by fire or smoke—and because the sides of the chute make it practically impossible to fall out;

SPEEDY—about 18 times as fast as descent by stairway.

How much can a City afford to pay to save lives?

Fortunately, the comparatively small cost of the EVACUATOR makes it possible to have several available at the price of one ordinary fire escape.

One fireman ascends the ladder, attaches the EVACUATOR to a window frame, and supervises egress. The EVACUATOR can be carried folded, on the back of another fireman following up the ladder, or it can be hoisted on the ladder.

Three types of EVACUATORS are available: Permanent Installation model; Ladder model and Aerial Ladder model.

WRITE FOR BOOKLET TODAY

EVACUATOR CORPORATION OF AMERICA

922 Book Bldg. Detroit 26, Mich.

Police and Race Relations

A Guide to Race Relations for Police Officers.—*By Davis McIntire and Robert B. Powers. Department of Justice, State of California.* 1946. 38 *pp.*

In the foreword by Robert W. Kenny, Attorney General of California, it is stated that this police training bulletin offers peace officers, for the first time, a concrete, practical guide for training in the vitally important field of race relations or, more accurately, the racial aspects of human relations.

The bulletin is based primarily on the results of training conferences in the Richmond, Calif., Police Department, with the State Department of Justice and the American Council on Race Relations cooperating. The conclusions reached in those discussions reflect the combined thinking of the score of officers and consultants who participated.

The bulletin's six sections cover the following topics: police problems of minority group relations, official attitude of police toward race relations, prejudice, basic facts about minority groups, minority group behavior, practical police methods in race relations.

Suggestions are made in the bulletin as to how it might be used for in-service training programs.

Race Conflict Study

The Problem of Violence—Observations on Race Conflict in Los Angeles.—*By Lloyd H. Fisher. American Council on Race Relations, 259 Geary St., San Francisco 2, Cal.* 1946. 20 *pp.* 25 *cents.*

The pamphlet is based on material collected by Joseph Weckler for the American Council of Race Relations. Although the study of race conflict was made in Los Angeles, it is explained that the fundamental causes are not different there from elsewhere, nor are the contributing causes.

The report discusses the problems existing in the area studied and advances several hypotheses for the guidance of those who seek an approach to the solution of race conflict. With the increasing amount of racial tension developing in urban areas throughout the country, municipal officials in such areas would do well to read this report. One basic recommendation is that a citizens' organization should be developed in which the lower-class Negro and Mexican can participate without being submerged.

Intergroup Relations

Intergroup Relations in San Diego.—*By Laurence I. Hewes, Jr. and William Y. Bell, Jr. American Council on Race Relations, 259 Geary St., San Francisco 2, Cal.* 1946. 35 *pp.* 75 *cents.*

This report deals with some aspects of community life in San Diego, which particularly affect minority groups, and includes recommendations for a program of community action. It was prepared at the joint request of the mayor, the city council, the superintendent of schools, and the board of education of San Diego. Although San Diego is the only city studied, the recommendations of the report should interest all other communities working for the improvement of race relations.

The program recommended suggests that city and county government employes should receive a period of in-service training in the various aspects of race relations, that the city should equip itself with a division or department of cultural relations, that law enforcement officers should receive special training in handling minority populations, and that a program of intercultural education should be formulated in the school system.

N. J. Municipal Statistics

Latest Financial Statistics of New Jersey Municipalities.—*New Jersey Taxpayers Association, 417 Broad St. Bank Bldg., Trenton 8, N. J.* 1946. 34 *pp.* $1.00.

This is a handy compilation of figures relating to budgets and expenditures of 565 local government units arranged by counties. It is laid out for easy reference and comparison, especially between the years 1937 and 1945. Tax rate and budget figures are also included for the year 1946.

Reorganizing State and Local Services

A Study of State and Local Relationships.—*Rhode Island Public Expenditure Council, 32 Westminster Street, Providence 3, Rhode Island.* 1946. 64 *pp.*

This report contains specific and well-thought-out suggestions for revamping the administrative services of Rhode Island. There are many helpful observations for citizens of other states who are interested in the problem of reorganization.

The general recommendations are that administrative services which are primarily local and do not require statewide uniformity, should be administered by local governments. Services that require uniform application throughout the state should be administered by the state.

Model State Constitution

Model State Constitution, with Explanatory Articles.—*Committee on State Government, National Municipal League, 299 Broadway, New York 7, N. Y. Partial Revision of Fourth Edition.* 1946. 51 *pp.*

There are two changes in this influential Model State Constitution, originally published in 1921. The first reduces the minimum age for voting from twenty-one to eighteen years, while the second shortens and simplifies the provisions regarding the framing and adoption of home rule charters for municipalities. In other respects, the Constitution remains substantially the same as in the Fourth Edition, published in 1941.

Sharing State Revenues

State Payments to Localities.—*An analysis of the Local Assistance (Moore) Plan and its potential effect on tax rates. Citizens Public Expenditure Survey of New York State. 100 State St., Albany 7, N. Y.* 1946. *Mimeo.* 21 *pp.*

The Moore Plan recently enacted by New York State, has been praised as an example of an approach to the financial problems of municipalities. This report analyzes the plan and shows the effect of its changes, directly and indirectly, on the tax rates of New York cities. Municipal officials interested in the plan should study its provisions before urging uncritical adoption of it by their respective state legislatures.

Layout of New Towns

Factors Influencing the Layout of New Towns.—*By The Association for Planning and Regional Reconstruction, 34 Gordon Square, London, W. C. 1.* 1946. 12 *pp.*

This brief report sets out a statement of principles to consider in the location and development of a new town. It is not only a compilation of some very specific practical considerations that must be taken into account, but also an expression of philosophy concerning the relation of new towns to existing population patterns.

The British have an awareness of the stimulating venture of new-town building and of what is required to make a new town that, as yet, seems to be lacking among American planners.

Establishing Community Centers

Community Centers.—*Canadian Federation of Mayors and Municipalities, Mount Royal Hotel, Montreal, Canada.* 1946. 29 *pp.*

This well-written report, prepared by a subcommittee of the Post-War Reconstruction Committee of the Government of Manitoba, makes many wise comments and suggestions for the establishment procedures of community centers and their importance in the healthful social organization of the community.

If the American municipal officials need further arguments as to why community centers are important they will find them in this booklet, which was prepared with the conviction that they are a necessary and worthwhile development in social progress.

Three Training Guides

Management Training Guides for Cities.—*A series of three pamphlets prepared by the Institute for Training in Municipal Administration. The International City Managers' Association, 1313 E. 60 St., Chicago 37, Ill.* 1946.

This series of three guides includes the following titles: *Management Training—Your Responsibility; Conference Method Training in Management,* and *The Conference Leader's Job.*

The guides average 15 pages each, but include a wealth of well-organized, digestible information and practical tips for the municipal administrator on the value of training programs, how to set them up, and preparing, conducting, and checking the results of conference training methods.

The conference method is by far the most effective one for training at the management level, according to one of the guides. Another points out, however, that the success of conference-method training depends very much upon the skill, experience, and personality of the conference leader.

New York's Future

New York and the Future.—*Bankers Trust Company, 16 Wall St., New York, N. Y.* 1946. 51 *pp. Available free upon request.*

This book, issued upon the occasion of the opening of a new office of the Bankers Trust Company in Rockefeller Center, is an indication of the Company's belief in New York and its future. The volume suggests some of the future growth of the city by means of illustrations and accounts of projects being planned in the New York area. It is also pointed out that what New York may be able to accomplish in the next few years cannot fail to be of interest to the other great cities of the world, all of which are facing similar problems.

Other Reports Received

Atlanta, Ga.—Eighth Annual Report of Atlanta Housing Authority, 1945-46. Illus. Unpaged.

Baltimore, Md.—Annual Report of the Bureau of Street Cleaning. Department of Public Works. 1946. Charts. 24 pp.

Boston, Mass.—*Boston City Charter:* 1906-1946. Boston Municipal Research Bureau and Chamber of Commerce. 1946. Tables. 22 pp.

Buffalo, N. Y.—Annual Report. 1946. Tables and Charts. 122 pp.

Cedar Rapids, Iowa.—*You'll Like Cedar Rapids.* Chamber of Commerce. 1946. Illus.

Chattanooga, Tenn. — Annual Report of the Electric Power Board. 1946. Illus.

Chicago, Ill.—*Chicago Cares: A Decade of Service.* Department of Welfare. 1946. Illus. 43 pp.

Grand Rapids, Mich.—Annual Report of the Sewage Treatment Works. 1946. Mimeo. 26 pp.

Irvington-on-Hudson, N. Y.—*Roofs or Ceilings?* By Milton Friedman and George J. Stigler. The Foundation for Economic Education, Inc. 1946. 22 pp.

Los Angeles, Calif. — Parkway and Transit System. Central Business District Association. 1946. Illus. 39 pp.

New York, N. Y.—Port of New York Authority, 25th Anniversary. 1946. 32 pp.

Oglesby, Ill.—Semi-annual Report. 1946. 27 pp.

Salem, Mass.—Annual Report of Park Department. 1946. 15 pp.

Seattle, Wash.—*Set-Up of County Planning Commissions.* Municipal League of Seattle. 1946. Mimeo. 7 pp.

Smithtown, N. Y.—Progress Report of Planning Board. 1946. Mimeo. 6 pp.

St. Louis, Mo.—Annual Report of Water Commissioners. 1946. Charts. 150 pp.

St. Paul, Minn.—Annual Report of Water Commissioners. 1946. Charts. 95 pp.

St. Petersburg, Fla.—Annual Report of City Manager. 1946. Mimeo. 54 pp.

Waterbury, Conn.—The Waterbury Survey. Council of Social Agencies, Inc. 1945. 70 pp.

Huntington Park, too, takes the "One-man Hook-up"

Huntington Park, California has just put its third Mack in fire department service . . . this modern 1000-gallon pumper. It features the "one-man hook-up" . . . an auxiliary length of 4-inch suction hose arranged with a swivel so that one man can easily put the apparatus into operation. This is a Mack pumper idea that's increasing in popularity on the West Coast. The name Mack has set the pace for fire equipment manufacture since 1910. Why not give your town the added measure of protection that Mack affords?

If your community needs additional fire-fighting equipment or replacements, think of Mack. Remember, Mack Fire Apparatus is backed by the greatest engineering resources in the industry.

Mack
FIRE APPARATUS

Mack Manufacturing Corporation
Fire Engine Department, Empire State Building
New York 1, New York

PERFORMANCE COUNTS!

News and Illustrations

Items of interest to city, town and county officials and others concerned with the economical construction and efficient operation of public improvement undertakings

Permutit Names Four Vice-Presidents

Four executives of The Permutit Co., 330 W. 42 St., New York, N. Y., have been elected vice-presidents of the company, according to a recent announcement by W. Spencer Robertson, chairman of the board.

Y. D. Yoder

J. D. Yoder, a chemical engineering graduate of the University of Michigan, was previously connected with the Cochrane Corporation as vice-president and general manager. He joined Permutit in 1936 and has been manager of the Boiler Feedwater Division.

D. J. Saunders

D. J. Saunders is vice-president of the Water and Sewage Works Manufacturers Association, Inc., and a member of the association's board of governors. He came to Permutit in 1920 and since January 1938 has held the position of manager of Industrial Sales.

G. N. Proctor, a graduate mechanical engineer of Drexel Institute, continued his studies at New York University's Graduate School of Business. He was associated with Thomas A. Edison, Inc., for fifteen years, acting during the last two years of that time as general manager of the E-Mark Battery Division. Mr. Proctor came to Permutit in 1944 as manager of manufacturing.

G. N. Proctor

H. L. Beohner holds the degree of sanitary engineer from Massachusetts Institute of Technology. He came to Permutit in June of 1930 immediately after receiving his degree. Mr. Beohner was appointed technical manager in April of 1946.

H. L. Beohner

Death of Clinton Inglee

With the passing of Clinton Inglee on December 21 the water supply profession lost one of its very influential and well-liked members. He was held in high regard from coast to coast as president of the National Water Main Cleaning Co., New York, N. Y., and served with distinction for many years as a director of the American Water Works Association and on the board of governors of the Water and Sewage Works Manufacturers Association.

He had been president of the Amityville board of education for more than twenty years. He was also a member of the Amityville lodge of Masons, trustee of the Simpson Methodist Church of Amityville, and active in several other groups locally.

Mr. Inglee was a member of the American Society of Mechanical Engineers and also of the Railroad and Machinery Club of New York.

Mr. Inglee is survived by his wife, Margaret Shanner Inglee; a daughter, Mrs. Margaret I. Deisroth; a son, Clinton F. Inglee, and his parents, Mr. and Mrs. Willis B. Inglee, all of Amityville; also a sister, Mrs. Emily I. David of Miami Beach, Fla.

Dorr Appointments

A recent announcement by John V. N. Dorr, president of The Dorr Co., 570 Lexington Ave., New York 22, N. Y., was made in connection with the following appointments:

Elmer R. Ramsen, formerly vice-president in charge of engineering, has been made operating vice-president; J. Delano Hitch, Jr., formerly manager of the foreign sales division, is now vice-president in charge of sales.

FWD Sponsors Research

A five-year research project to promote safe, economic, and efficient highway transportation got under way during the current school year at the University of Wisconsin College of Engineering. The project, supported by a grant accepted by the university in 1945 from The Four Wheel Drive Auto Co., Clintonville, Wis., is under the direction of Archie H. Easton, who has been on the staff at the Aberdeen Military Proving Grounds for the last five years.

The primary objectives of the project are to make basic studies of truck and highway design, considering safety, economy, and efficiency; to compare four-wheel-drive trucks with single-axle drive trucks through experimental tsets; and to provide advanced study in the fundamentals and techniques of truck and highway design for safe, economic, and efficient transportation.

Investigations have been conducted for several years by Herman V. Larsen, FWD experimental engineer. Several of his experiments, particularly the turning-circle tests, will be examined by the university researchers.

The Four Wheel Drive Auto Co. also announced recently several appointments to its staff.

A. R. Krug has been made zone sales manager for the states of Tennessee, Alabama, Florida, Georgia, South Carolina, and North Carolina. Mr. Krug was formerly assistant sales promotion manager at FWD.

William C. Merrill was named zone sales manager for the states of Texas, Oklahoma, Arkansas, Louisiana, and Mississippi. Mr. Merrill has been district sales supervisor in this territory, with headquarters at Duncan, Okla.

In addition, FWD truck sales headquarters for the states of California, Nevada, Arizona, Utah, New Mexico, Colorado, Wyoming, Montana, Idaho, Oregon, and Washington have been established at the Newhause Bldg., Salt Lake City, Utah, according to an announcement by P. M. Schmidt, western states sales zone manager.

Herman Larson, experimental engineer at the Four Wheel Drive Auto Co., and Archie H. Easton, engineer in charge of the five-year research project that is being conducted by the University of Wisconsin for the purpose of promoting improved highway transportation.

Meet Mr. A-C

WHO IS HE?

When a business succeeds, it usually grows. This growth calls for a more complex system of management and, often, more widespread ownership.

Take a company like Allis-Chalmers, which has grown and progressed for 100 years. Just who is Mr. A-C? Because the answer to a question like that is complex, it is easy for people to pick up mistaken impressions.

For the sake of the record, let's take Mr. A-C apart and see who he really is.

WHO IS CAPITAL?

Capital doesn't wear a silk hat at Allis-Chalmers. "Capital" consists of 23,100 stockholders who own an average of less than 110 shares each. Mr. Capital might be a grocer, a farmer, a widow, a school teacher, or YOU. He might be a company employee in the office or shop or an officer of the company.

No one individual or family owns more than ½ of 1 percent of the total stock of Allis-Chalmers. This is an example of democratic ownership distinctive in the history of large corporations.

WHO IS MANAGEMENT?

Management is the guiding hand (or head) hired by the owners to make an organization tick — and click! Management coordinates the efforts of individuals and sets the direction the company travels.

Who is Mr. Management at Allis-Chalmers? Not just the officers and division heads of the company. Management is the salesman in the territory, the foreman in the shop.

Management is every employee from errand boy to president who contributes by word and deed to the progress of the company.

Speaking of errand boys, two of the top officers of Allis-Chalmers started with that job. Two others started as salesmen in the field. Two others as student engineers. All Allis-Chalmers officers know the business from the ground up — through experience with the company.

Mr. Management doesn't wear a high wing collar at Allis-Chalmers. Neither does he have any monopoly on his job.

WHO IS LABOR?

The man who works in the shop is spoken of in the newspaper as "labor." Actually, he may be a skilled craftsman, as much a master of his trade as a dentist or a surgeon.

Actually he may be a part of *Management* by reason of some suggestion he has made to improve a process or a product.

Actually he may be a part of *Capital* through ownership of company stock.

The fact that he works with his hands makes him no less a part of Allis-Chalmers than the man or woman who works at a desk. The terms "Capital," "Management," and "Labor" are indefinite and overlapping. Many a man who works in the shop is actually a part of all three groups.

Introducing Mr. A-C

Who then *is* Mr. A-C? He is a combination of 23,100 stockholders, 25,000 employees, nearly 5,000 dealers and their employees, and more than 10,000 suppliers who furnish in excess of 100,000 separate items for manufacture.

He symbolizes a company in which no individual or family owns more than ½ of 1 percent of total stock.

His is a company which contributes something to better living in nearly every home in America — in supplying machines to grow and process food, generate electricity, pump water, build roads, produce building materials.

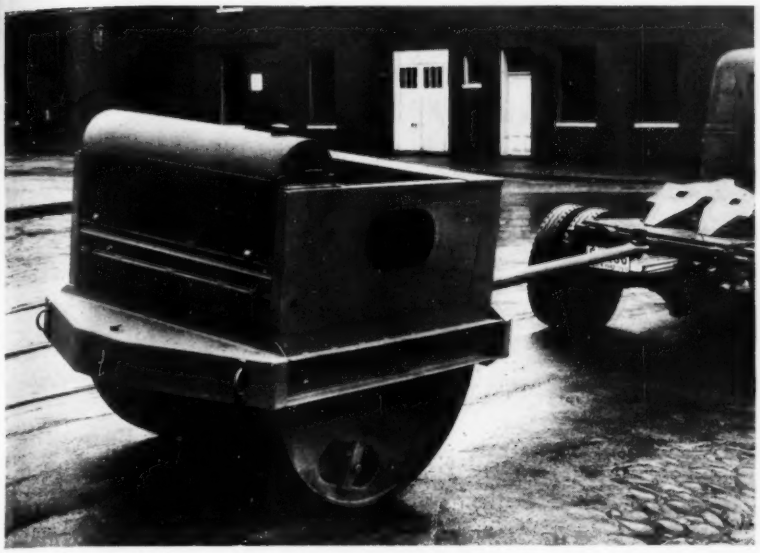
Quite somebody, Mr. A-C! A potent contributor to the welfare and livelihood of millions of people. It takes the right hand, left hand, head, heart and pocketbook to achieve such results. No one part of him can do the job alone.

ALLIS-CHALMERS

TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

2-CYCLE DIESEL CRAWLER TRACTORS • MOTOR GRADERS
POWER UNITS • INDUSTRIAL WHEEL TRACTORS

Handy Towed Roller



Littleford's new trailer-type roller which can be used in conjunction with a truck or tractor for any rolling jobs.

The Model US-45-130 roller manufactured by Littleford Bros., Inc., 500 East Pearl Street, Cincinnati 2, Ohio, is a "trailer-type" roller designed for use in conjunction with a truck or tractor for any rolling job, especially airport runways, parking areas, gravel or bituminous paving, highways shoulders, etc.

It is simple in construction, having few adjustments and no delicate parts requiring attention. Only four parts require lubrication, therefore simplifying its maintenance.

This roller weighs 2,000 pounds when empty, which provides 42-pound compaction per lineal inch of roller. When filled with water the compaction is increased to 98 pounds. When filled with sand, the compaction is 127 pounds per inch. The width of the roller is 48 inches and the diameter is 48 inches.

In many instances, the roller may be operated by hitching it to the rear of a truck and pulling it over the area to be rolled. In some cases where patches or small areas of bituminous paving are to be rolled, the operator can observe the work and control the roller better by hitching the roller to the front of the truck and alternately pushing and pulling it over the work.

When rolling bituminous materials or sheet asphalt, the surface of the roller should be kept wet to prevent the material from sticking. A cocoa mat riding on the rollers is provided for this purpose. The mat is moistened by a perforated spray pipe from the water tank. The flow of water onto the roller is controlled by adjusting the valve between the spray pipe and tank. The water tank can easily be lifted off the roller frame to reduce height when transporting. When rolling bituminous material, the mat pressure can be adjusted by thumb screws.

The roller is provided with two scrapers. Tension springs are installed on both to provide any pressure necessary to keep the roller clean and remove anything which may be picked up or stick to the roller.

Zinc Yellow Priming Coat Protects Highway Signs

The experience of the Army and Navy in protecting equipment against rust and corrosion during the war is being used by at least seven state highway departments, according to a recent report by chemists of E. I. du Pont de Nemours and Co., Inc., Wilmington 98, Del.

Alabama, Iowa, Kentucky, Massachusetts, Michigan, Minnesota, and Missouri are using a priming paint containing an average of 27% zinc yellow pigment for protection against rust on both new and existing steel highway signs. Primers formulated with this pigment are said to dry rapidly and provide a hard, adherent surface for the finish coat.

Where there is continuous exposure to the weather, the du Pont chemists said, the use of a zinc yellow priming coat on a clean metal surface affords many additional years of rust-free life.

Taking Inventory Without Writing

A new and easy way to streamline inventory methods is provided by a portable inventory recording machine. It is equipped with a tiny chest microphone which allows complete freedom of the inventory-taker's hands and enables him to work a considerable distance from the recording instrument.

The device is made by the Dictaphone Corp., 420 Lexington Ave., New York, N. Y.

Escorted Plant Tours at Caterpillar

Escorted tours through the Peoria, Ill., factory of Caterpillar Tractor Co. are again being conducted. These tours were restricted during the years of the war.

During the last complete year in which such trips were permitted, "Caterpillar" had a total of 19,662 visitors.

Clay Sewer Pipe Assn. Adds to Technical Staff

Joshua M. Sprague has joined the technical staff of the Clay Sewer Pipe Assn., Inc., 1105 Huntington Bank Bldg., Columbus 15, Ohio, according to a recent announcement. Mr. Sprague is to be district engineer representing the association in the state of New York and in the Atlantic seaboard, with offices at 26 Court St., Brooklyn, N. Y.

He attended the University of Miami, Fla., and Columbia University, and has been connected with th War Research Laboratory at Columbia since 1943.

LaPlant-Choate Appoints Turner as Assistant Sales Manager

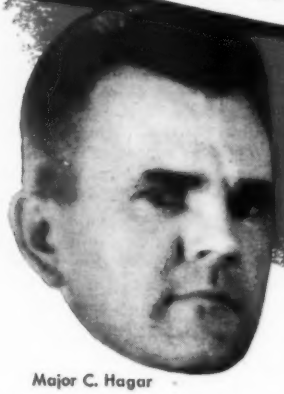
K. V. (Ken) Turner has been appointed assistant sales manager of LaPlant-Choate Mfg. Co., Inc., Cedar Rapids, Iowa, according to a recent announcement by E. R. Galvin, executive vice-president and general sales manager.

K. V. Turner

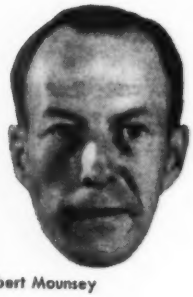
Mr. Turner started with LaPlant-Choate in the engineering department in 1938. Since then his experience with the company has comprised service work, export sales, coordination between the federal government, sales and production; government sales, field engineering research, and district sales representation in the northeastern part of the United States.

He returned to Cedar Rapids last year to assist in organizing LaPlant-Choate's independent dealer program. His recent promotion is a result of outstanding work in connection with this program, which will be completed with the appointment of additional domestic dealers.

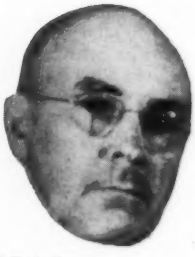
another taste and odor problem solved by Mathieson Chlorine Dioxide!



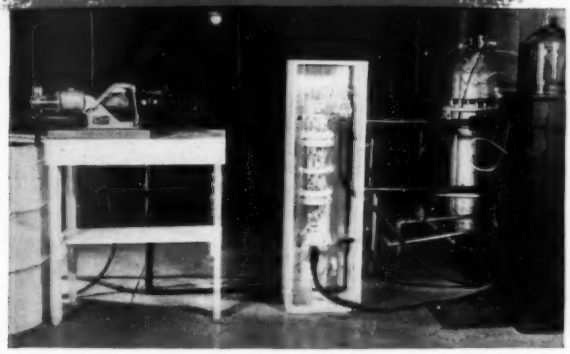
Major C. Hagar



Robert Mounsey



Prof. F. A. Russell



Water Superintendent Major C. Hagar of the City of Lawrence, Kansas, and his staff testify that the cost of Mathieson ClO_2 treatment is small considering its enthusiastic reception by consumers.

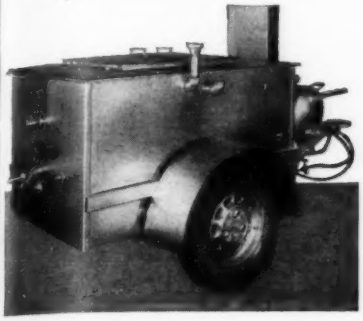
During January and February, 1946, melting snow and ice created especially unpleasant tastes and odors in the Kaw River, water supply for the City of Lawrence, Kansas. Yet, the Mathieson Chlorine—Chlorine Dioxide water treatment was able to cope with even that extreme condition.

Write Mathieson for details of this new technique. It's a development of interest to every water works superintendent. THE MATHIESON ALKALI WORKS (INC.), 60 E. 42nd St., New York 17, N. Y.

Chlorine Dioxide . . . Sanitation HTH . . . Liquid Chlorine PM-Plus (Fused Alkali) . . . Caustic Soda . . . Soda Ash Bicarbonate of Soda . . . Ammonia, Anhydrous & Aqua Carbonic Gas . . . Dry Ice . . . Synthetic Salt Cake Sodium Chlorite Products . . . Sodium Methylate

Mathieson
CHLORINE DIOXIDE

New Kettle for Heating Bituminous Compounds



The new White Model F-10, made on the "double-boiler" principle, which heats bituminous compounds containing rubber and substances for making elastic joints in concrete highways.

The increasing use of bituminous fillers containing rubber or other substances for elastic joints in concrete highways has presented a new problem to those in charge of this work, White Manufacturing Co., Elkhart, Ind., points out. The filling compounds cannot be subjected to temperatures which adversely affect the rubber ingredients. They are damaged by coking or burning if heated in ordinary kettles, the bottom of which is in direct contact with the flame.

To meet requirements for "double-boiler" type heating, the White Manufacturing Co. has produced a new model to be known as F-10. This has an inner kettle for the filler compound, surrounded by an outer kettle containing a heat-transferring agent such as special oil. The two are mounted in a regular kettle housing, completely insulated by asbestos.

Two White kerosene burners furnish rapid starting. The oil is raised to 500° in 30 to 45 minutes, and that heat maintained by one burner. The compound in the inner kettle gradually achieves the proper temperature without the danger of coking or over-heating. It has very exacting thermal characteristics—it melts at 375° and must not exceed 425°. The White kettle is said to hold these temperatures.

The inner kettle is divided by a screen into two sections so that, during operations, compounds can be added to the front section to melt and flow through to the rear. The screen prevents passage of semi-molten material to obstruct the outlet. In the rear compartment of the compound kettle is a hand-operated paddle agitator for stirring the compound.

In new highway construction, the average procedure has been to pour 40 to 50 joints per hour in 24-foot-wide pavement. The company explains that this kettle makes possible the coverage of 1600 to 2000 lineal feet of highway per hour, or a total of 960 to 1200 of poured joints.

The new Model F-10 is mounted in a steel frame with towing eye and non-collapsible steady rest, on semi-elliptic springs and pneumatic tires.

Traffic Rise Increases Accident Hazards

Despite the few new cars on the highways, automobile traffic has increased 10% over its pre-war high and is still going up, according to Lloyd Reid, traffic engineer of Detroit. With such a rapid increase, traffic accidents will also hit an all-time high during the coming months unless drivers and highway officials alike take extra precautions, Mr. Reid declared.

Speaking before a highway safety meeting called by the International Salt Co., Inc., Scranton, Pa., to complete plans for increasing road safety this winter, Mr. Reid pointed out that fatal car accidents always show a sharp rise during the snow and ice season. Because the coming winter months will be even more dangerous than usual, in view of the steady increase in traffic, he urged public officials to start preparing for winter now, so that adequate supplies of rock salt and snow removal equipment will be on hand to keep highways free of snow and ice. The only safe road is a snow-free road, he added; and, with modern techniques available, there is no reason why every road should not be a safe road every day in the winter.

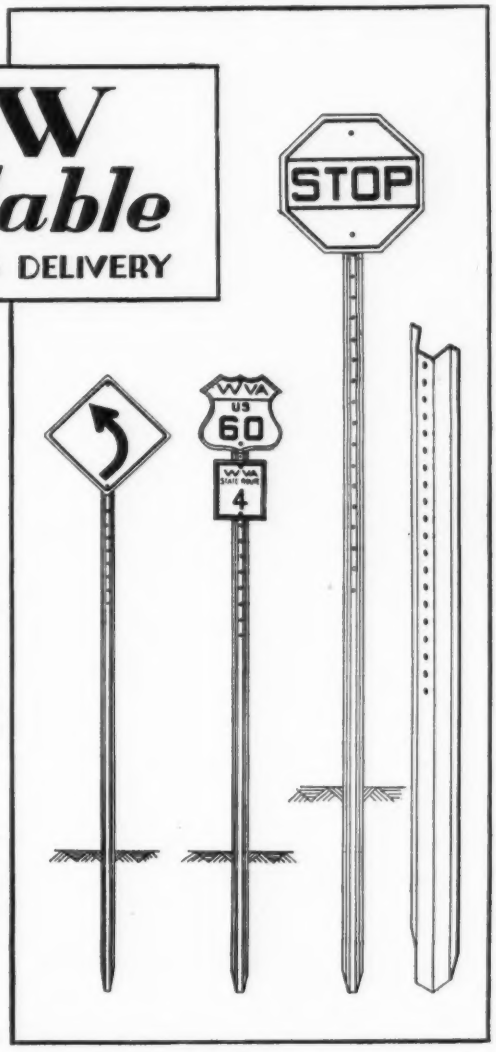
NOW *available*
FOR SPRING DELIVERY

SIGN POSTS!
ROUTE MARKER POSTS!

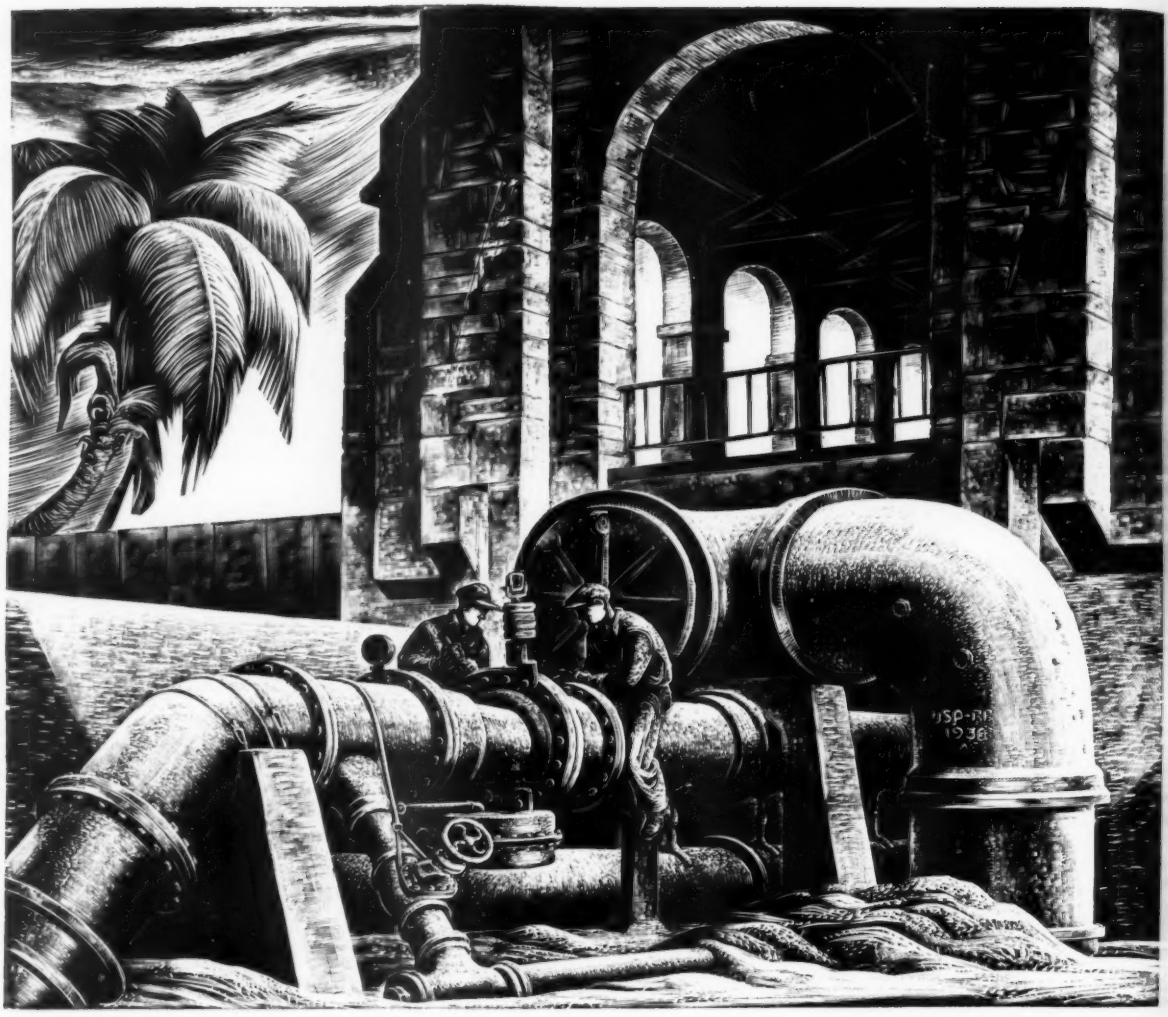
Good signs should have good supports. HUNT Sign Posts are of consistently high quality—manufactured of rail steel for high tensile strength and finished with a glossy weather-resisting baked-on green enamel.

Also available are a complete line of standard Stop, Warning and Reflectorized signs; also Street-Name and Portable Warning signs.

Write for Catalog and Prices, to Steel Products Division



THE HUNT COMPANY
Established 1920
3700 W. McNichols Rd. Detroit 21, Mich.



Original Woodcut by Lynd Ward

Filtration plants from the Gulf to Canada, and across the country, depend on U. S. Cast Iron Pipe and Fittings for untroubled, economical service. Our 48 years of experience in this field parallels the development of *mechanical* filtration, from the earliest days, nearly a half century ago. Our facilities, including a specialized plant for manufacturing fittings, are at your service. So are our technical staffs if you would welcome, without obligation, their co-operation in working out difficult pipe design problems, for present or future needs.

U.S. cast iron PIPE

U. S. PIPE & FOUNDRY CO.
General Offices: Burlington, N. J.
Plants and Sales Offices throughout the U. S. A.

Wire Baskets for Street and Park

One of the Norwich wire baskets used on a street corner to keep streets lean. This is the diamond-mesh model with interlocking ring.

Many towns and cities are discovering that wire baskets on streets and in parks aid in the improvement of appearance, promotion of health, sanitary cleanliness and stimulation of civic pride.

The Norwich Wire Works, Inc., Norwich, N. Y., one of the manufacturers of wire mesh baskets for such purposes, produces baskets of both square mesh and diamond construction.

Included in their models is the diamond-mesh basket, which is braced from all directions. Another model has eight vertical braces and an interlocking ring, is 28 inches in over-all height, and weighs approximately 26 pounds. Still another model of the same construction has the interlocking ring, with a height of 34 inches and a weight of approximately 46 pounds.

Among cities using the baskets are New York; San Francisco, Calif.; Athens, Pa., and Americus, Ga.

Literature from the company illustrates the many types of baskets available.

New Meter Trade Name

The descriptive term of "Flowrator" is the trade name that Fischer & Porter Co., Hatboro, Pa., now gives to its metering equipment, previously referred to by the general term "Rotameter." The company lists the following four reasons for the change:

1—The name Rotameter, though in common usage until now, is a misnomer. "Rota" erroneously suggests "rotation" as an operating requirement. F & P floats operating in "Bead-Guide" tubes are self-stabilized and need not rotate.

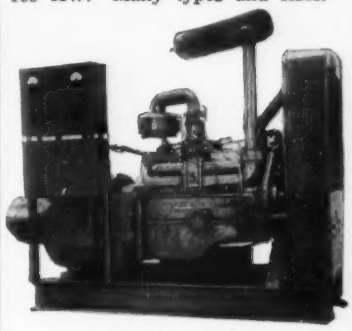
2—Also erroneously suggested is the idea that Rotameters measure rotation.

3—Pronunciation of the word "Rotameter" is controversial, depending on the choice of accent.

4—The name "Rotameter" is anyone's property, does not differentiate between manufacturers, and cannot denote quality or character of product.

A. C. CURRENT ANYWHERE WITH KATOLIGHT

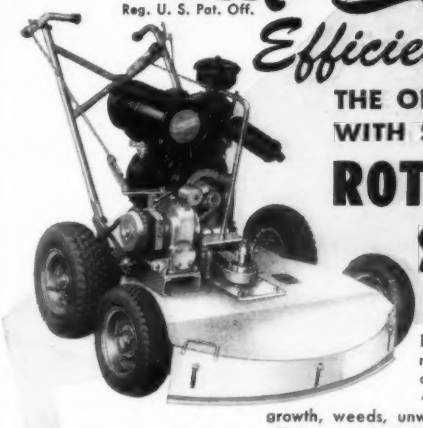
When power goes off, and *where power lines fail to reach,* use KATOLIGHT.
Use it for *emergency lighting.*
Use it as either *emergency or constant source of power* for operating compressors, drills, etc.
KATOLIGHT is a standby necessity for *police, fire, park* and *public works departments.*
Portable & Stationary. 500 watt to 100 KW. Many types and sizes.



Write for Booklet

KATO ENGINEERING CO.
1405 First Ave.
MANKATO, MINN.

Investigate TRADE-MARK **WHIRLWIND** Reg. U. S. Pat. Off. *Efficiency!*



THE ONLY POWER MOWER WITH SERVICE-PROVED ROTARY SCYTHE SUCTION-LIFT *Cutting Action!*

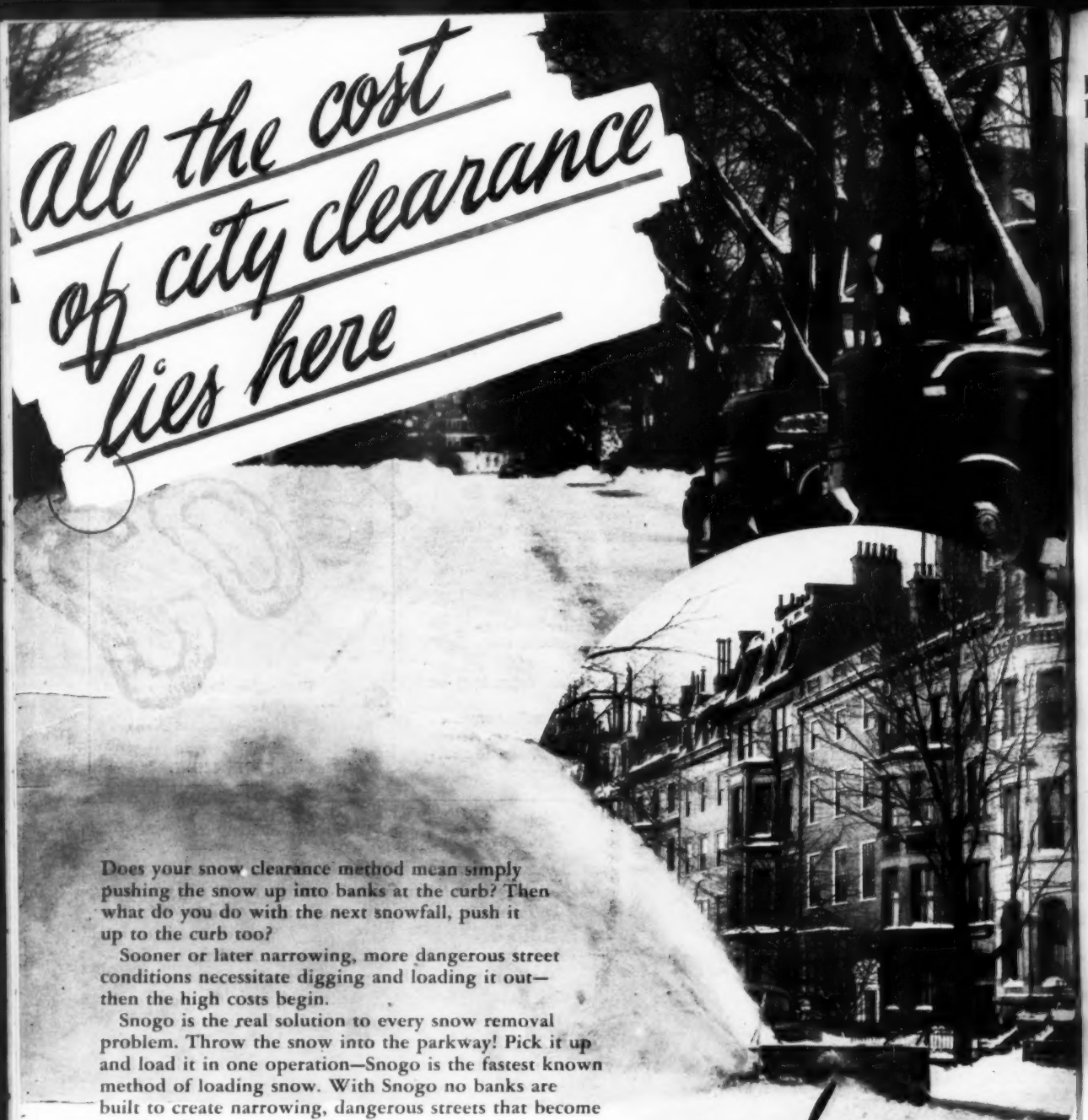
Here is everything you want in a power mower . . . uniform, rug-smooth trimming of grass of any height, in any condition — including rank, matted or tangled growth, weeds, unwanted seedlings, etc. Cuts with equal efficiency on both backward and forward travel. Trims close to trees, walls, fences, flower beds, along walks, under overhanging shrubbery. Even sweeps walks! Mulchifies clippings for self-fertilization of turf; eliminates raking.

Only WHIRLWIND offers this amazing, diversified efficiency . . . because only WHIRLWIND offers the patent-protected, service-proved Rotary Scythe SUCTION-LIFT cutting principle . . . extensively employed in public grounds maintenance for more than 15 years. *Write for full details and name of our nearest dealer. Address Dept. C1-147.*

THREE MODELS
WHIRLWIND Grassking. Cuts up to 6 acres per day. Width of cut—31 inches.
WHIRLWIND Model SP. Cuts up to 4 acres per day. Width of cut — 24 inches.
WHIRLWIND Junior. 20-inch cut. For maintenance of smaller lawns and valuable as auxiliary equipment.

WHIRLWIND LAWN MOWER CORP., 730 W. Virginia St., Milwaukee 4, Wis.

all the cost of city clearance lies here



Does your snow clearance method mean simply pushing the snow up into banks at the curb? Then what do you do with the next snowfall, push it up to the curb too?

Sooner or later narrowing, more dangerous street conditions necessitate digging and loading it out—then the high costs begin.

Snogo is the real solution to every snow removal problem. Throw the snow into the parkway! Pick it up and load it in one operation—Snogo is the fastest known method of loading snow. With Snogo no banks are built to create narrowing, dangerous streets that become running ditches in the spring. Snogo leaves the drives, crosswalks, and intersections clear and reduces the danger of ice-sheet.

Snogo means open winter cities, better winter business and makes possible normal service from fire and police departments, bus and trolly transportation.

Remove your snow—don't just move it. Let us tell you what other cities and towns are doing to reduce snow removal costs with Snogo.

KLAUER MANUFACTURING CO., DUBUQUE, IOWA

SNOGO

A SNOGO For EVERY BUDGET

POSITIVELY GUARANTEED TO HANDLE ANY SNOW CONDITION THAT WILL EVER OCCUR ON ANY AIRPORT

banks can't build up when you use Snogo

Portable Chute-Type Fire Escape

The Evacuator being demonstrated on an apartment house. Note the sides of this fire-resistant canvas chute, which provide the greatest amount of safety.

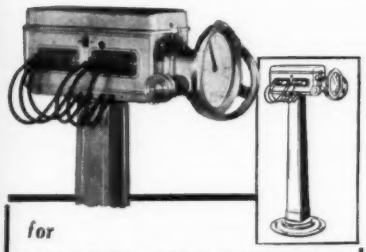
The old dramatic, but dangerously inefficient method of carrying a person down the ladder from a burning building has now been superseded by an easily installed canvas chute that will let children, old people, cripples, or those that are unconscious descend from the building quickly and safely.

This new chute, called the Evacuator and built by the Evacuator Corporation of America, 922 Book Building, Detroit, Mich., consists of a folding chute of fire-resistant, mildew-proof canvas duck, suspended from a window or wall opening on the upper floor of a building. When the chute is not in use, it is packed in a metal case at the side of or under the window sill. To operate it, the case is opened and the Evacuator swung into place at the window, the chute unfolding and falling to the ground outside. The lower end is then held by two adults while another adult supervises entry to the chute at the window or wall opening.

The apparatus has received the enthusiastic backing of fire chiefs all over the country and was recently featured in a test demonstration in Chicago.

New Vice Presidents for American Rolling Mill

R. C. Todd, G. F. Ahlbrandt, and Dr. Anson Hayes have been elected vice-presidents of the American Rolling Mill Co., Middletown, Ohio, by the board of directors, according to a recent announcement by Charles R. Hock, president.



for
BALANCED PUMP OPERATION
Specify
SELECTROL

SELECTROL closely balances total pump capacity with rate of inflow at each operating level, for either rising or falling level cycle. It handles up to 18 circuits singly or in combination for any float travel up to 40 feet. A large number of circuits can be handled on limited float travel. A feature of SELECTROL is the "Lost Motion Clutch" which balances pumps of unequal capacity without "hunting". AUTOMATIC can help you with your multiple circuit problems.

Write for Bulletin S-7

AUTOMATIC CONTROL Company
1015 University Ave., St. Paul 4, Minn.

Freezing weather! Inadequate heating! These factors need not load up your meter shop with repair jobs. The frost bottom in American or Niagara water meters patented in 1921 and improved in 1938 prevents costly damage.

When ice forms in the meter and expansion takes place, the low cost bottom casting breaks, relieves pressure and allows all working parts including the gears to move with the ice. Damage is limited to the frost bottom. By replacing the bottom, on the spot, the meter is again ready for service.

The breaking point is carefully controlled and checked in advance by pressure tests at the factory.

The advantages of frost bottom meters are available to you at no extra cost.

Write for the full story on these meters that have become standard in many communities where temperatures drop below freezing.

AMERICAN BRONZE CASE
NIAGARA GALV. IRON CASE
WATER METERS
BUFFALO METER COMPANY
2902 MAIN STREET • BUFFALO 14, NEW YORK
Simplicity

Clearing out a snow-bound town . . . *fast*

One Haiss snow loader does the work of 80 men, and handles up to 15 cubic yards a minute.

Loading high-sided trucks by hand is back-breaking, slow, expensive. But with a Haiss snow loader it's a modern mechanized operation, faster, cheaper, and more dependable.

This machine gets an amazing amount of work done because it is a positive digger and conveyor, operating on the continuous principle. Many communities run their machines all day and all night.

It's a glutton for light snow. And it's the best loader for hard and frozen snow because it is the only machine that digs upward as it loads. This is the loader you can depend on when the going is tough.

Our nearest sales representative will gladly arrange for you to see one in action.

Haiss is now a wholly-owned subsidiary of Pettibone Mulliken Corporation of Chicago. With new management and much larger resources, Haiss can now do a still better job for its customers . . . better machines and servicing, larger production, quicker deliveries.

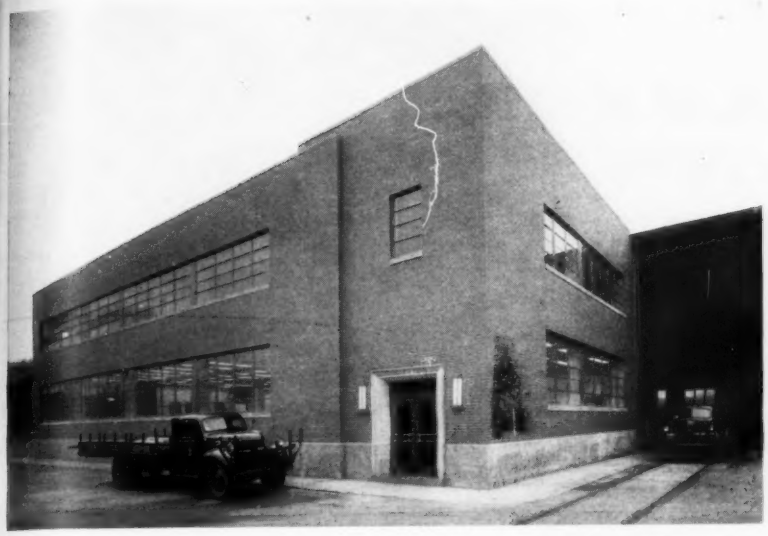
Haiss specializes in equipment to load bulk materials . . . sand, gravel, stone, coal, topsoil, snow, etc.

Its machines are money-makers for their owners.

George Haiss Manufacturing Co.

140th St. & Park Ave.
New York 51, N. Y.

Ryerson Enlarges Plants



The new office building completed by Joseph T. Ryerson & Son, Inc., at its Pittsburgh steel-service plant is designed to provide fast handling of orders.

Designed and engineered to provide working space that would assure maximum speed and efficiency in handling and dispatching orders, a new and unique office building recently has been completed at the Pittsburgh plant of Joseph T. Ryerson & Son, steel jobbers, of Chicago, Ill.

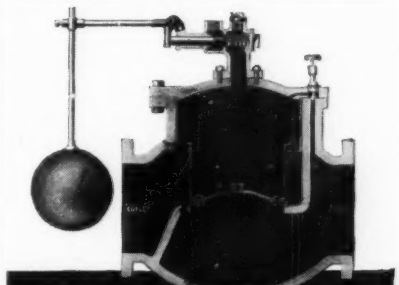
The building is a two-story structure of steel, brick, and stone. The location of its plant operations, coupled with the engineered arrangement of the general offices, and a carefully worked out system of communications permits exceptionally fast handling of orders.

General offices are on the first and a portion of the second floor. The remainder of the second floor contains locker space and wash and rest rooms for both office and plant employes. Asphalt tile floors, ceilings acoustically treated, and the latest type of troffer fluorescent lighting is used. Equipment for heating and ventilation is housed on the roof, a departure from the customary basement installation.

The Pittsburgh plant is located within easy driving distance of the "golden triangle" and well situated for prompt truck delivery throughout the entire metropolitan region, as well as for rail and highway carrier service to more distant points.

The Ryerson organization also announced the completion of an addition to the structural shop office building at their Chicago plant to provide added convenience and improved service to customers. The new construction is an extension building located at the corner of 18th and Rockwell Sts., adjoining the south warehouse of the company.

The estimating and drafting division of the structural shop department, formerly housed in the main building at 16th and Rockwell St., is now located on the second floor of the enlarged building. The template shop occupies the remainder of the second floor. A special conference room also has been provided on this floor for the use of architects and engineers who have occasion to call at the plant. A convenient room is provided on the first floor to accommodate and facilitate the work of visiting inspectors.



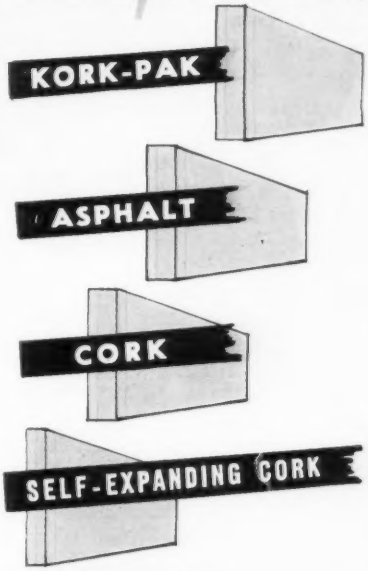
GOLDEN-ANDERSON
HIGH PRESSURE
COLD WATER
Float VALVES

Available in standard sizes from 3 inch to 36 inch, in Angle and Globe Patterns—iron, semi-steel, and cast steel bodies with non-corrosive trim of bronze, Gavalloy or Stainless steel.

100-page descriptive Catalog, free on request.

GA
GOLDEN-ANDERSON
VALVE Specialty Company
PITTSBURGH 22, PA.

SERVICISED
PREMOLDED
EXPANSION JOINT
FILLERS
for HIGHWAYS . . . DAMS
AIRPORTS . . . BRIDGES . . . TUNNELS
and GENERAL CONSTRUCTION



★ KORK-PAK
Non-Extruding KORK-PAK Fiber Joint is a composition of bitumen and cork, preformed between felt strips, and designed to incorporate various desirable qualities.

★ ASPHALT
Premolded ASPHALT Joint is a mixture of asphalt, fiber, and mineral filler preformed between felt strips. The standard joint for use where concrete slabs are not subject to excessive movement, and some extrusion is not objectionable.

★ CORK
Non-Extruding CORK Joint is an excellent type where a construction job requires the consideration of a resilient, non-oozing joint. Specified for use in dams, swimming pools, reservoirs, tunnels, bridges.

★ SELF-EXPANDING CORK
Non-Extruding SELF-EXPANDING CORK Joint is designed especially for concrete slabs that contract beyond their original set.

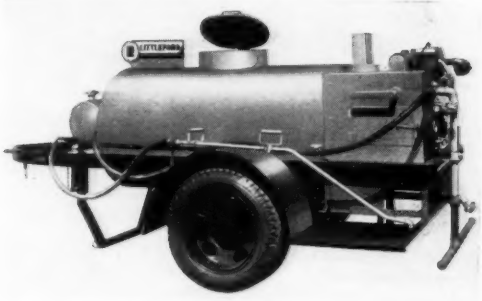
SERVICISED EXPANSION JOINTS are specified by State Highway Departments and Army & Navy Engineers throughout the country.

Write for further specific information.

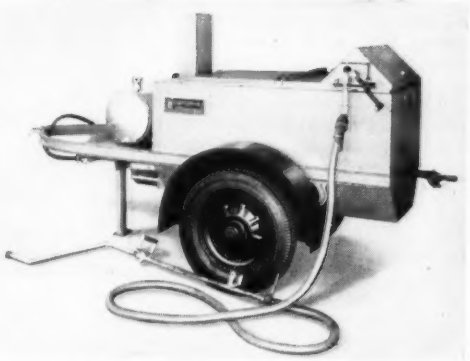
SERVICISED PRODUCTS CORP.
6051 West 65th Street Chicago 38 Ill

LICK THE RAVAGES OF WINTER... *with* LITTLEFORD REPAIR EQUIPMENT

TRAIL-O-ROLLER



101 UTILITY SPRAY TANK



84-HD ASPHALT KETTLE

It's just a shame, what Old Man Winter is doing to your highways—as will be more evident later. Now is the time to investigate this trio of Littleford units for making all repairs as needed. You'll like the efficiency and convenience of the No. 155 Trail-O-Roller, portable, compact, fast, with as much compaction as a five-ton tandem. Find out about that 84-HD heating kettle that heats up faster than anything else on the market. The 101 Utility Spray Tank is a combination of three units . . . spray bar, hand spray and pouring pot. With this trio, your road repairs will be done faster, more efficiently, and more economically. Write today for complete information.

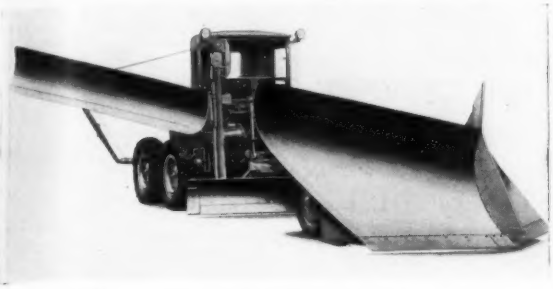
BLACK TOP ROAD MAINTENANCE EQUIPMENT · LB · SINCE · 1900

LITTLEFORD

LITTLEFORD BROS., Inc.

500 E. PEARL ST., CINCINNATI 2, OHIO

Caterpillar Now Producing Snow Removal Attachments



Here is a "Caterpillar" diesel motor grader equipped with a "Caterpillar" V-type snow plow and mast-type snow wing.

New and improved snow removal attachments are now available for the "Caterpillar" diesel No. 212 motor grader as well as the two larger sizes of motor graders manufactured by Caterpillar Tractor Co., Peoria, Ill. The company announces that it now produces such attachments as the V-type snow plow, the mast-type snow wing, and the reversible one-way plow and bulldozer.

The snow wing and bulldozer are new to the "Caterpillar" diesel No. 212 motor grader, giving that machine the same year-around utility which has marked the "Caterpillar" diesel No. 12 and No. 112 motor graders in the past. Improvements in the operation of the mast-type snow wing has been effected in all sizes, with modifications that insure smooth parallel lift with both ends of the blade elevated simultaneously.

The mast-type snow wing for the smallest grader has a 10-foot blade and is 27 inches high with a weight of 1500 pounds. The reversible one-way plow and bulldozer for the "Caterpillar" diesel No. 212 motor grader is 8 feet 6 inches wide and 28 inches high, weighs 1,740 pounds, and has a lift of 12 inches.

Concrete Pipe Association to Hold Annual Meeting

American Concrete Pipe Association, Chicago, Ill., will hold its three-day annual national convention beginning February 23 in the Statler Hotel, St. Louis, Mo. In addition to the United States membership, attendance of industry members from England, Canada, and other countries is anticipated, according to a recent announcement by Howard F. Peckworth, managing director of the association.

A series of technical papers, election of officers, and the annual dinner will highlight the program, which opens with a board meeting on Sunday afternoon, February 23.

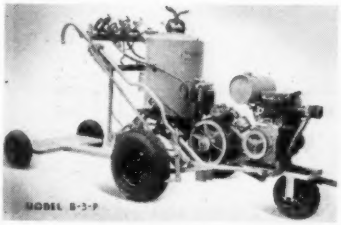
Galvin Appoints Assistant to President

Paul K. Povlsen has been appointed to the position of assistant to the president of the Galvin Manufacturing Corp., 4545 Augusta Blvd., Chicago 51, Ill., makers of Motorola home and car radios and automatic car heaters, according to a recent announcement by P. V. Galvin, pres.

Paul K. Povlsen

Mr. Povlsen was formerly vice-president in charge of production and engineering for the J. I. Case Co., Racine, Wis., and was previously with the New York Telephone Co. and the New Jersey Bell Telephone Co.

There is a Kelly-Creswell Model that will SOLVE your Zone Marking Problems.



Uniform Cross-Distribution
Clean-cut, Attractive Lines
Pressure Cleaning Equipment
Air-Actuated Traction.

More Highway Zone-Marking Material is applied thru K-C Equipment than thru any other make. ***There must be a reason.***

KELLY-CRESWELL CO., Xenia, Ohio

ROSS Automatic Valves

1879

Also manufacturers of float valves, pressure-reducing valves, relief valves and back pressure valves.

No distribution system is better than the valves that control it —

ALTITUDE VALVES
For control of elevation and heads into and out of tanks, basins and reservoirs.
1. Single acting.
2. Double acting.
3. Combination assembly for three or more automatic operations.

COMBINATION VALVE
Combination automatic control both directions through the valve. A self-contained unit, with three or more automatic controls.

REMOTE CONTROL VALVE
Electric remote control—solenoid or motor can be furnished.
Adapted for use as primary or secondary control on any of the hydraulically controlled or operated valves.

Write today for catalogs and details to fit your particular system.

ROSS VALVE MFG. CO.
INCORPORATED
P. O. BOX 596, TROY, N. Y.

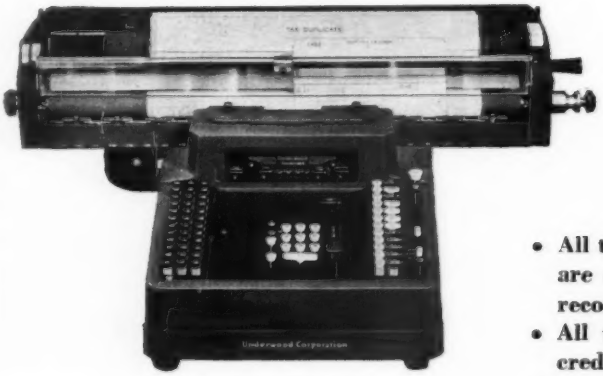
A Happy New Year

FOR PASSAIC'S DEPARTMENT OF REVENUE AND FINANCE

Underwood Sundstrand Tax Accounting Machines are in operation in the Tax Office of the City of Passaic, N. J. Paul G. DeMuro, Director of Revenue and Finance, compares "formerly" with "now."

Formerly—

- **The Tax Roll and 20,000 tax bills were written by hand.**
- **Temporary clerks were employed, with delays and errors.**
- **There was endless duplication.**
- **The safeguards of modern municipal accounting were lacking.**
- **A cash book was written by hand.**
- **Payments were posted by clerks working in teams.**



Now—

- **All the tax charges and payments of each taxpayer are on an individual unit ledger card—complete record.**
- **All the data are legible because both debit and credit posting are by Sundstrand machines.**
- **In spreading the tax, the valuation is automatically multiplied by the tax rate.**
- **The tax extension and the charge posting are made simultaneously.**
- **Payments are machine posted to the correct unit tax ledger card.**
- **There are less delinquencies and larger collections.**

Ask for a copy of our folder describing the new Sundstrand Automatic Tax Accounting Machine as presented at the Conference of the New Jersey State League of Municipalities. There is no obligation.

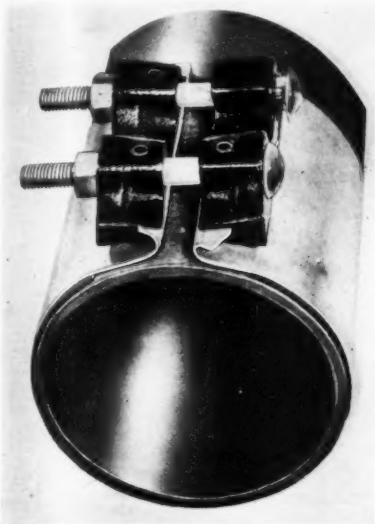
UNDERWOOD CORPORATION

Accounting Machines . . . Typewriters . . . Adding Machines . . . Ribbons, Carbon Papers and other Supplies

One Park Avenue **New York 16, N. Y.**

Sales and Service Everywhere

Pipe Leak Repair Clamp



Smith-Blair's new pipe leak repair clamp, adaptable for all types of metallic pipe and asbestos-cement pipe.

A new pipe leak repair clamp, said to make sealing-off of leaks in pipe lines quickly and as permanent as the line itself, has been introduced by Smith-Blair, Inc., 533 Railroad Ave., South San Francisco, Calif.

Sizes now available are for pipes from ½ to 30 inches in diameter, and the clamp is adaptable for all types of metallic pipe and for asbestos-cement pipe. The clamp has a copper band sleeve which gives approximately 100% wrap-around without using a "tongue," the company points out.

A unique feature of this design is the cast lugs, which can be reduced in length for 30-inch sleeves down to 3-inch sleeves in even multiples of 3 inches. This can be accomplished without special tools in the field, or can be furnished by the factory in any sleeve length.

Davey Compressor Makes Appointments

J. T. Myers has been elected vice-president in charge of sales and production of the Davey Compressor Co., Kent, Ohio, according to a recent announcement by Paul H. Davey, president.

J. T. Myers

Mr. Myers has been a member of the Davey organization for the past five years. During the war he served as engineering officer aboard a mine sweeper in the Atlantic and later was on a special assignment at the Naval Engineering Laboratories at Annapolis, where he contributed to the development of important new life-saving equipment for the Navy. For the past year Mr. Myers has served as assistant general manager of the Davey company.

Appointment of the Claude B. Smith Co., a partnership of Claude B. Smith and Edwin R. Cahill, 615 Sansome St., San Francisco, as northern California distributors of Davey compressors, was also announced by Mr. Davey. The new distributor will offer complete sales and service facilities on all Davey items, as well as a fleet of rental compressors.

Locate Underground Leaks

without any digging . . .

with a

GEOPHONE

(Reg. U. S. Pat. Off.)

The original leak locator of the Geophone type

Placed in contact with earth, the GEOPHONE accurately detects, by sound, the position of leaks in underground water or steam pipes.

Leaks are too costly to be ignored. A pin-point size leak wastes 45,000 gallons of water annually!

A GEOPHONE saves the cost of locating leaks—saves the costs of surveys, excavating, replacing. A big paying investment for water, sewerage and Public Works Departments; for any plant with underground water or steam pipes.

Outfit complete with two GEOPHONES, connecting tubes, earphones, in heavy leather carrying case with shoulder straps. ...$75

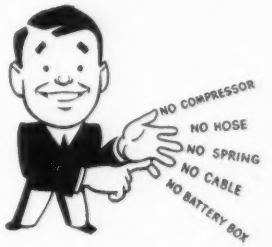
Write at once to

Globe Phone Mfg. Corp.

Dept. H., Reading, Mass.

Manufacturers of the Geophone Since 1918

100% Self-Contained



SYNTRON

Gasoline Hammer

PAVING BREAKERS

BUST Concrete

DIG Clay or Shale

(or frozen ground in winter)

CUT Asphalt

TAMP Backfill

Quickly and Easily

Their powerful, hard-hitting 2,000 blows per minute save time and money on such jobs.

Write for Folder #8-45.

SYNTRON CO.

430 Lexington, Homer City, Pa.

KARPARK

• From the city's standpoint the most important reason in choosing a parking meter is DEPENDABILITY. With its simple automatic operation, rugged strength, accuracy, full-flag visibility, precision construction and tamper proof features KARPARK can be depended on to please the public; to make enforcement and maintenance easy; to bring a steady, profitable return. That is why more and more cities are wisely deciding on KARPARK. As no short-cuts or inferior substitute materials are used in manufacturing, delivery requires a little longer time in spite of increased production. To make sure of the wise choice, write now!

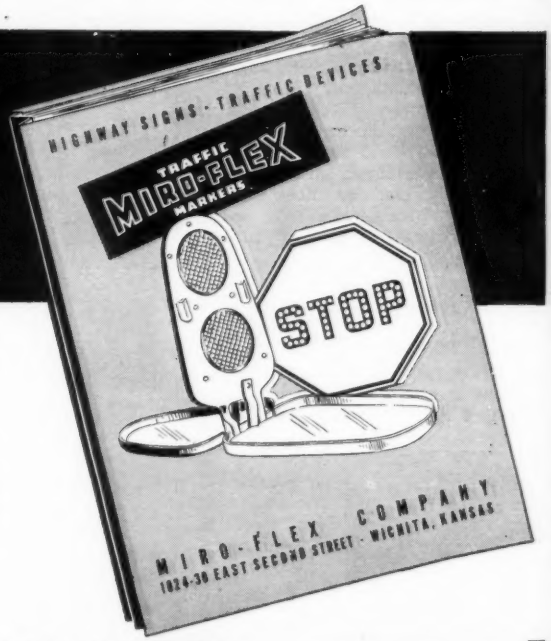
THE WISE CHOICE

KARPARK *Automatics*

KARPARK CORPORATION, CINCINNATI 6, OHIO

KARPARKS ARE MANUFACTURED BY THE HERSCHEDE HALL CLOCK CO.

YOU- NEED THIS HANDY SIGN REFERENCE CATALOG



Here's a new catalog of signs that should be in your file. You'll want to spend some time in leafing thru it because it illustrates the Miro-Flex line completely.

You'll find signs for every traffic control need; moreover, you'll find descriptive detail of the finest sign line in America — Remember Miro-Flex signs are plain or embossed, baked enamel on Bonderized metal, and you can buy them with or without lucite reflectors.

Send for your copy of catalog today.

MANUFACTURED BY

MIRO-FLEX COMPANY

1824 EAST SECOND STREET · WICHITA, KANSAS

Rockwell Purchases Ohmer Corp.

Ohmer Corp., Dayton, Ohio, has been purchased by the Rockwell Manufacturing Co., Pittsburgh, Pa., Col. Willard F. Rockwell, board chairman and president of Rockwell, recently announced. This addition gives the Rockwell organization twelve wholly-owned subsidiaries and divisions.

N. J. Kenny

The Ohmer Corp., manufacturers of taximeters, fare registers for streets cars and buses, and cash registers, will continue to operate and maintain plant and headquarters in Dayton. The new management will continue and expand the regular line of Ohmer products.

N. J. Kenny of Pittsburgh has been elected president of the Ohmer Corp. by the reorganized board of directors and plans to move to Dayton immediately. Mr. Kenny was formerly president of the National Meter Co., Brooklyn, N. Y., and since the amalgamation of National Meter with Rockwell Mfg. he has served as assistant to Colonel Rockwell. In addition to Mr. Kenny, other officers are: W. F. Rockwell, Jr., and J. Allen Harlan, vice-presidents; E. W. Meyers, secretary-treasurer.

Gar Wood Makes Appointments

W. H. Hammond, vice-president in charge of sales of Gar Wood Industries, Inc., Detroit, Mich., announced recently the following additions to its staff: Robert F. Whitworth, as division sales coordinator, George W. Murphy, as branch sales coordinator, and Russell D. Hiller, Jr., as district manager of the general line with headquarters in Tulsa, Okla.

Mr. Whitworth was a colonel in the Army, where he supervised the procurement, production, and inspection of more than 1,250,000 vehicles for the Detroit Ordnance District. Prior to entering the Army, he had been associated with the Great Lakes Steel Corp.

Mr. Murphy, who served as a major in the Marines, was formerly general sales manager for cereals in the Albers Milling division of the Carnation Co.

Mr. Hiller's territory will embrace Texas, Oklahoma, and Louisiana. Before joining Gar Wood, Mr. Hiller, a graduate of the University of Texas, was associated with Air Reduction Sales Co. in Tulsa.

THE WORLD'S LOUDEST LOUDSPEAKER

Coverage and economy are the standards to which we work. By a simple new principle we make a 20-watt amplifier do a big job; two of them cover the Yale Bowl. One mounted on a tug plying the Ohio talks to lockmasters 2½ miles ahead, saving hours every trip. Two cover ¾ mile of an Atlantic beach and boardwalk and lifeguards can be heard over the roar of the surf and the blare of music. VOCAL-AIRE really does a job. The installation is easy, the maintenance low. Don't confuse it with an ordinary public address system; VOCAL-AIRE is different.

Designed to cover large outdoor areas or to direct activities at distances up to a mile . . .

It may be a stadium, a terminal, a construction project, a race track . . . but if you want to be heard clearly and distinctly . . . and without bulky amplifying equipment . . . well then, VOCAL-AIRE is what you need.

May we tell you more about it? An illustrated folder is yours on request.

DILKS, Inc. NORWALK CONNECTICUT

WHY—

The above illustration shows the position of the rubber lining in

Bi-Lateral Fire Hose

when it is held in a flattened position between calls into service. This is why we can save a city one replacement, because the hose will give double the service of any hose constructed under the old method.

— Also —

We can load 25% more on the apparatus-bed, actually making an $8,000 truck loaded with the Bi-Lateral construction cheaper than one priced at $7,000 when loaded with other construction.

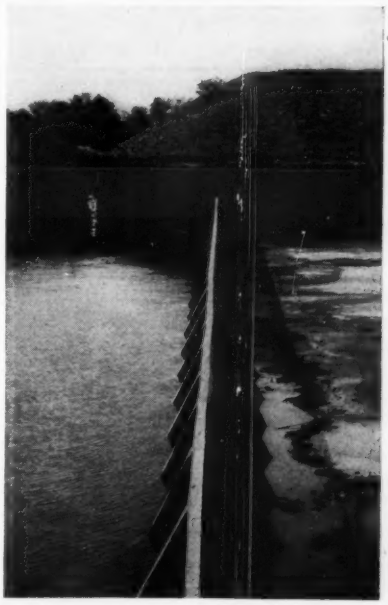
BI-LATERAL FIRE HOSE CO.

20 N. Wacker Drive, Chicago, Illinois

CEMENT GUN COMPANY

"GUNITE" CONTRACTORS

GENERAL OFFICES—ALLENTOWN, PENNA., U.S.A.



"GUNITE" DIVISION WALL IN RESERVOIR

The "GUNITE" division wall illustrated is in the Clear Springs Reservoir, Borough of Northampton, Pa., and was built by us in 1923. This wall has a maximum thickness of 5" and is eight feet high. It is designed as a slab between "GUNITE" buttresses. For the past twenty-three years it has served perfectly its purpose of permitting the emptying of the reservoir by halves for periodic cleaning.

In 1941 we placed a reinforced "GUNITE" lining on the side walls of this same reservoir, one half at a time, and the division wall was carefully examined and found to be in perfect condition, with no cracks and no leaks or even minor seepage.

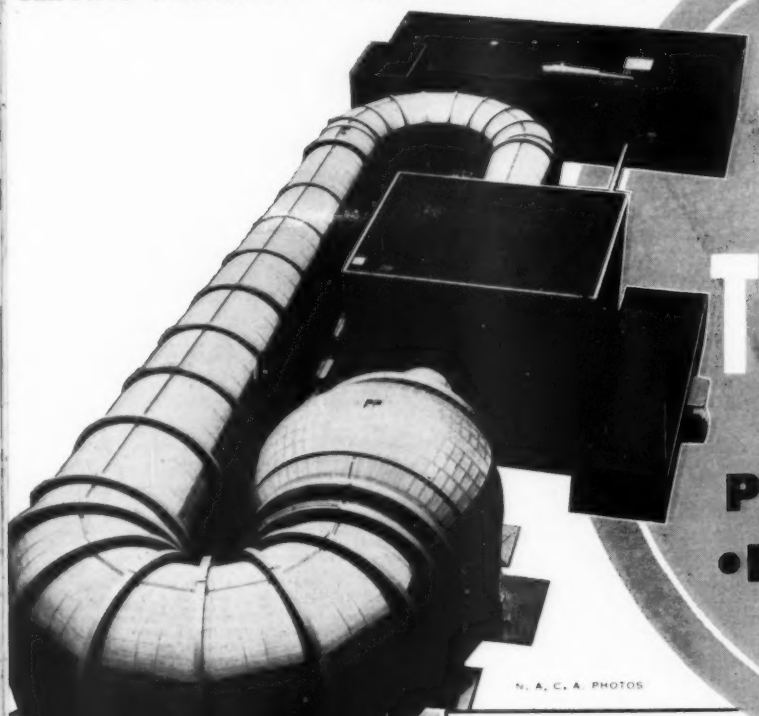
This work and scores of other "GUNITE" jobs of many types are described in our 72-page bulletin D2300. We will gladly send you a copy upon request.

MANUFACTURERS OF THE "CEMENT GUN"

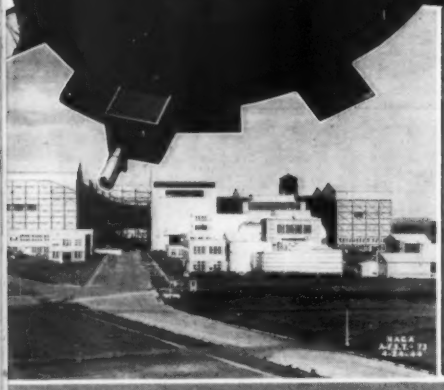
SERVING PROGRESS IN AMERICAN AERONAUTICAL RESEARCH . . .

WIND TUNNELS

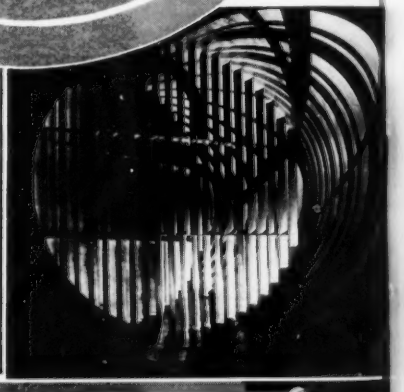
by PITTSBURGH •DES MOINES*

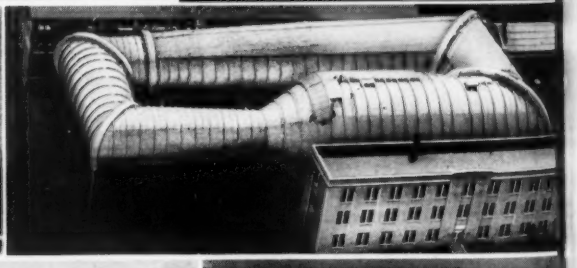


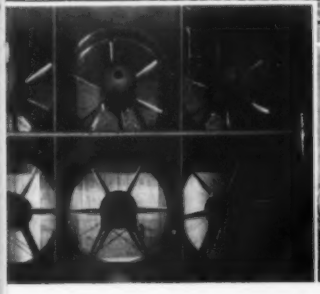
N. A. C. A. PHOTOS

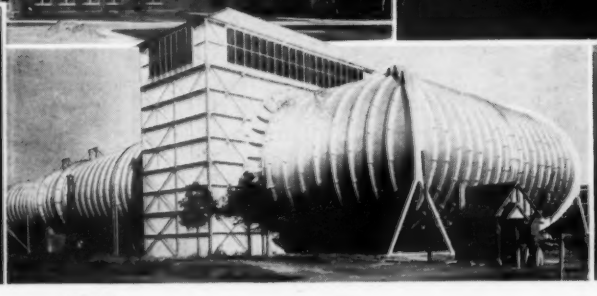


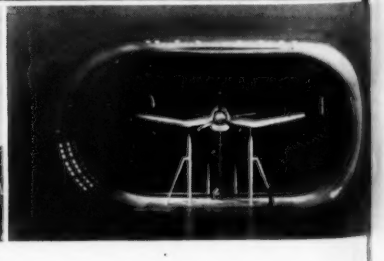
• A particular specialty, yet one which signalizes to every user of fabricated steel structures or products the heights reached by PITTSBURGH-DES MOINES craftsmanship, experience and integrity in the most exacting types of steel construction.











A few of the very many Wind Tunnels, including the world's largest, built by P.DM for our government and private industry.

PITTSBURGH · DES MOINES STEEL COMPANY

PITTSBURGH, PA., 3412 NEVILLE ISLAND—DES MOINES, IOWA, 913 TUTTLE STREET
NEW YORK, ROOM 915, 270 BROADWAY · CHICAGO, 1216 FIRST NATIONAL BANK BLDG. · DALLAS, 1217 PRAETORIAN BUILDING · SAN FRANCISCO, 619 RIALTO BUILDING · SEATTLE, 520 FIRST AVENUE, SOUTH

Reflectorized Batons for Night Direction

This lucite traffic baton with yellow plastic buttons helps simplify the job of directing and handling traffic at night.

A reflectorized traffic baton, used during the war by military police for night direction of traffic, is now being offered to civilians by the Signal Service division of American Gas Accumulator Co., Elizabeth, N. J. This baton is being used by public utility crews and police, fire, and water departments throughout the country for handling traffic at night games and other darkened areas, and for emergencies.

Approximately 16 inches long, the baton consists of a light barrel and a battery case. The light barrel is of clear lucite with yellow plastic Stimsonite buttons recessed in three rows of six each. The reflector buttons alone usually give sufficient light when car lights are at normal brightness. However, it is easily visible and does not blind the way a flashlight might when used for night traffic direction. An inside light may be used if additional brillance is required. The reflector buttons also provide a standby against battery or bulb failure.

Addison Vars Agency Changes Name

Addison Vars Co., Buffalo, N. Y., an advertising agency, changed its name recently to Comstock, Duffes & Company, which includes the names of two of the four partners—Henry W. Comstock, Kenneth S. Duffes, H. Earl Close and Frank J. Hess.

Established in 1888 in Pittsburgh, Pa., as the E. P. Remington Co., it was later purchased by Buffalo interests. In 1928, the agency was named after its president, Addison Vars. In 1940, Mr. Vars relinquished active direction and three years later the present partnership went into effect.

The executive set-up will remain the same under the new name.

Committee Formed to Study Airport Construction Problems

A joint cooperative committee was established between the National Association of State Aviation Officials and The Associated General Contractors of America, Munsey Bldg., Washington 4, D. C., at a meeting of representatives of both organizations in Washington.

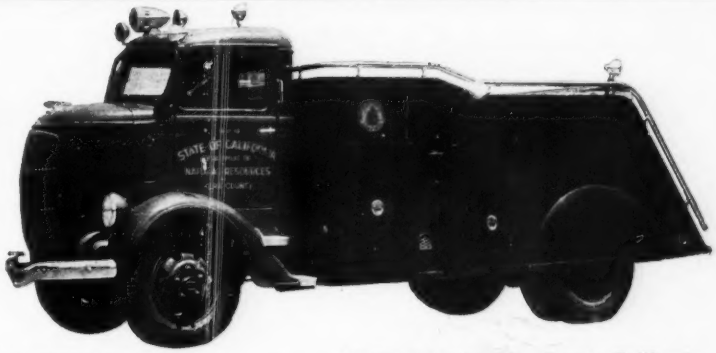
In making the announcement, Dabney Yarbrough, Jr., of the South Carolina Aeronautics Commission and chairman of NASAO Engineering Committee, and H. E. Foreman, managing director of AGC, said:

"Passage of the Federal Airport Act authorizes the appropriation of $500,000,000 in federal funds to be matched by local sponsors for a seven-year airport construction program. The rapid development of this program brings up many problems.

"Close cooperation between the officials who will be responsible for the design, preparation of plans, award of contracts, and administration of these airports with the contractors who will do the grading, paving, erection of buildings and installation of necessary utilities is essential.

"This committe provides the means through which aviation officials and contractors can secure a better understanding of their mutual problems, and through which practical suggestions can be developed for improved efficiency and economy in airport construction.

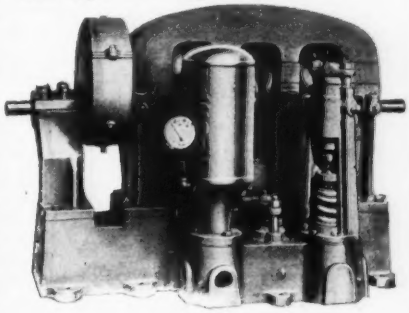
"The experience of the national committee will establish a pattern for cooperative meetings between state aviation commissions and the state and local chapters of the A.G.C."



BECAUSE the Fog Fire Fighter takes water from any source, puts out more fire with a pint of water than gallons of solid stream can extinguish and avoids water damage, the Fog Fire Fighter is now recognized as a first line unit in all well organized departments.

Hardie High Pressure pumps and Fog Guns are standard equipment on Fog units built by many leading manufacturers of fire trucks. When you specify Hardie pumps you get volume and pressure instantly, when you want it, and for as long as you want it because the Hardie pump works up to its rating easily, smoothly and AT SLOW SPEED. Specify Hardie. Write for specification data.

Operated by the Kern County California Fire Department, Harold P. Bowhay, Chief, this Hardie equipped Fog Fire Fighter carries a 500-gallon tank, auxiliary pump for low pressures, lighting generator, 1250-watt flood light, 650 feet of hose and gun equipment for both fog and straight stream.



The Hardie Imperial LCXA Pump delivers 60 G. P. M. at 800 P. S. I. at 130 R. P. M.

THE HARDIE MFG. COMPANY

Hudson, Michigan Los Angeles, Calif. Portland, Oregon

Canadian Distributor C. W. LEWIS, Grimsby, Ontario

HARDIE

High Pressure PUMPS AND FOG GUNS for Fog Fire Fighters

NOW AVAILABLE FOR PROMPT DELIVERY

Automatic feed, hand-operated Mimeograph brand duplicators

MIMEOGRAPH BRAND DUPLICATOR, MODEL 90. Ideal for the smaller school, the growing business . . . for churches, chain stores, branch offices everywhere. Simple and easy to use. Free instruction. Handsome efficiency, popular price.

MIMEOGRAPH BRAND DUPLICATOR, MODEL 91. General purpose, medium price. Closed cylinder. Turns out those clear, easy-to-read, low-cost, black-and-white copies by tens or hundreds, as you want them. Easy to use color, too.

The Mimeograph brand duplicator

IS MADE BY
A. B. DICK COMPANY, CHICAGO

MIMEOGRAPH is the trade-mark of A. B. Dick Company, Chicago, registered in the U. S. Patent Office.

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A. B. DICK COMPANY, Dept. AC-147
720 West Jackson Boulevard, Chicago 6, Illinois

☐ Place my order for_____Model_____Mimeograph brand duplicator with the distributor nearest me.

☐ Have a salesman call.

☐ Send me more information on Model_____

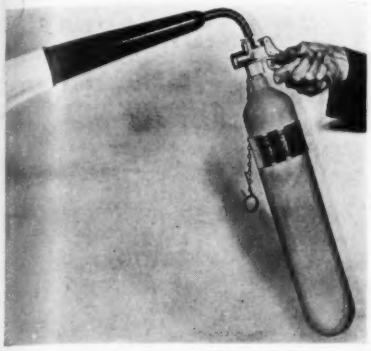
NAME.....

ORGANIZATION.....

ADDRESS.....

CITY.....STATE.....

New Fire Extinguisher



American-LaFrance's light-weight, trigger-quick carbon dioxide fire extinguisher—total weight less than 12 lbs.

A new midget fire extinguisher, just announced by American-LaFrance-Foamite Corp., Elmira, N. Y., is ideal for putting out small fires in oils and grease.

The Alfco Speedex, as it is called, has contents weighing only 3⅝ pounds, but which expand upon release to 450 times their contained volume. It is only 3 9/16 inches in diameter, with an over-all length of 22 inches. It is operated by a quick-acting valve which releases the carbon-dioxide extinguishing agent by palm pressure.

Speedex carbon-dioxide gas is non-poisonous, non-corrosive, and odorless. It is a non-conductor of electricity and will not freeze at any climatic temperature. It is heavier than air and will not support combustion.

The Underwriters' Laboratories have rated it as B-2; C-2, indicating that two such extinguishers make one unit of first-aid fire protection for use on flammable liquids, greases, and electrical equipment fires.

The extinguisher is shipped fully charged and with wall hanger, screws, and record tag.

Ozonation to be Installed at Phila. Water Works

As a step in a ten-million-dollar first-stage interim program for the rehabilitation of its present water treatment facilities, Philadelphia, Pa., has awarded a contract for ozonation equipment and its installation at the Belmont filtration plant to Welsbach Engineering and Management Corp., Philadelphia, Pa. The equipment will be supplied by Ozone Processes, Inc., 1500 Walnut St., Philadelphia, Pa., a wholly-owned Welsbach subsidiary.

This ozone installation, to be the largest in the United States, will produce 1250 pounds of ozone to treat thirty-six million gallons of water daily. Ozone will be applied to the raw water ahead of coagulation and filtration to oxidize soluble taste, odor, and color-producing impurities.

According to Thomas Buckley, director of public works, the ozonation installation is expected to be in full operation in 1948.

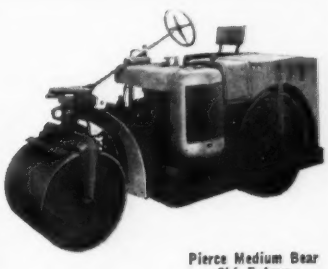
Arthur Hicks Joins Philadelphia Consulting Engineer

Arthur Hicks is now associated with Charles Haydock, consulting engineer, Philadelphia 2, Pa. Mr. Hicks, a civil engineering graduate from Princeton University, was formerly assistant engineer of The Mountain Water Supply Co.

A Roller For Every Job

Sturdy, heavy-duty rollers, engineered to stand up under the toughest conditions. Pierce-Bear Tandem Rollers are powered by economical Allis-Chalmers 4-cylinder industrial type gasoline engines. Variable weights, from 3½ to 5 tons with built-in water tanks for ballast and wet rolling.

Pierce Baby Bear
2½-3 tons



Pierce Medium Bear
3½-5 tons

The new 2½-3-ton Pierce Baby Bear is designed for close-in work and small area maintenance. It works against a curb up to 25 inches high and within 1½ inches of a higher wall or building. Final drive is within the rear roll. Use Pierce-Bear Tandem Rollers for all-around performance. Write for folder.

Pierce-Bear Rollers

Lewis Manufacturing Co.

415 Hoefgen Ave.—San Antonio 6, Tex.

★ ★

Fresh, high quality broom fibres last longer

AFRICAN BASS FIBRES

INDIA PALMYRAH STALKS

The longer mileage you obtain from fresh broom fibres means less time-taking refilling of the broom core and valuable man-hours put to an extra use. The use of fresh, high-quality fibres in your mechanical sweeper is sound economy these days.

MOUNTAIN HICKORY SPLINTS

STEEL WIRE SWEEPER STALKS

We are able to service every need in all types and sizes. We would be happy to receive your request for samples and quotations.

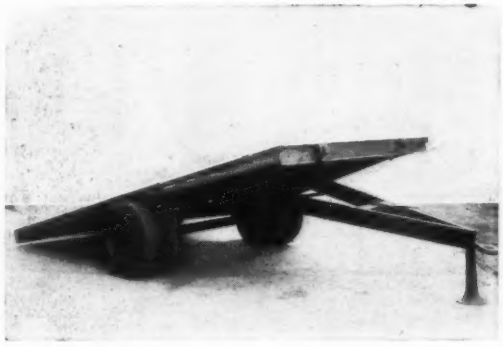
The OTTO GERDAU CO.

Established 1872

82 Wall Street, New York 5, N. Y.

Tilt Top Trailer

One Man Loading



Two Sizes—5 and 8 Ton Capacity

Exceptionable Ease of Loading—Dependable and Fast

IMMEDIATE DELIVERY

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525 NORTH 22ND STREET WEST 1380

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THE BEST NON-CORROSIVE AND ANTI-RUST COATING IN THE WORLD WILL FAIL UNLESS PROPERLY APPLIED

AS NATIONALLY APPROVED APPLICATORS OF SUCH MATERIALS AS ***NO-OX-ID, BARRETT*** AND OTHER COATINGS WE COMBINE CRAFTSMANSHIP AND PRODUCT TO INSURE MAXIMUM PROTECTION ON—

STEEL STAND PIPES
ELEVATED WATER TANKS
WATER MAINS
PENSTOCKS
OTHER WATER WORKS INSTALLATIONS

BUILDING INSTALLATIONS

WHERE SURFACE OF PRESSURE AND GRAVITY TANKS, COOLING TOWERS, DEHUMIDIFIERS, AIR CONDITIONERS, ETC., REQUIRE TREATMENT OUR SERVICES ARE AVAILABLE.

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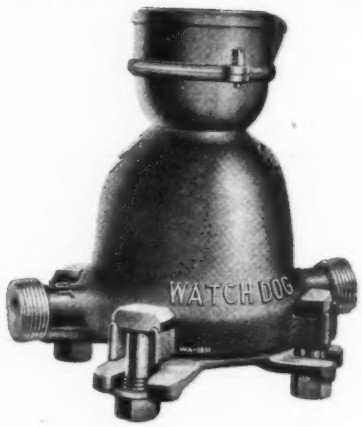

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All Sizes All Types

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296 South Street Newark 5, New Jersey

While There's Life, There's Hope"

THE 7-POINT PROGRAM OF THE NEW NATIONAL CANCER FOUNDATION

1. Provide nursing care for cancer sufferers in homes.
2. Operate medical information bureaus and referral services, nationally, for cancer victims.
3. Establish personal welfare services for the families and the dependents of cancer patients.
4. Continue to press for immediate Government action against cancer, on all levels . . . Federal, State, Municipal.
5. Collect and disseminate the latest scientific information on the treatment of cancer in advanced stages.
6. Endow beds and wards for advanced cancer patients . . . in existing hospitals.
7. Establish Hope Institutes for the humane and scientific care of advanced cancer patients. Who will be first to build and endow such an institute, a model for the others to come?

Join today, send check or money order to

The National Cancer Foundation

85 Franklin Street New York 13, N. Y.

Traffic Signs that Wink

The illustration at the top shows a standard road-side STOP sign with the new mechanism installed. Picture lower left shows rear view with "Winko-Matic" box, and small picture, lower right, shows winker arm and motor.

An automatic, electrically-controlled device that gives life and action to the standard traffic sign has just been announced. Any roadside sign, new or in service, can be equipped with the "Winko-Matic," the principle of which produces the effect given by the well-known railroad crossing "blinker" signals—an on-and-off flash.

The simple design and construction of this equipment is said to assure low maintenance costs. It is available in three sizes: 18, 24, and 30 inches. All that is necessary for installation is the cutting of two openings for the insertion of the two-colored lenses and the bolting of the mechanism to the back of the sign. The mechanism is enclosed and therefore is not affected by rain, wind, and temperature changes. It can be operated on either d-c or a-c current.

Detailed information and exact specifications can be secured by addressing D. C. Reiger, president, Winko-Matic Signal Co., 750 Broadway, Lorain, Ohio.

Splicing Wires Without Solder

As a chain is no stronger than its weakest link, so an electrical current is no more reliable than its connections. The pig-tail type of wire splice is the most common of all electrical connections. The time-honored method for making this joint, by twisting the wires together and soldering, usually requires the electrician to make three trips up the ladder to strip, twist, flux, solder, and tape the joint. In addition, it takes considerable skill to make a good soldered joint.

A few years ago a new type of connector, called the pressure connector, was introduced to the electrical industry. In this type of connector the barrel into which the conductor is inserted is deformed and pressed into the strands, so that for all practical purposes the barrel and the strands become a homogeneous mass of copper. During the war this principle enabled the armed forces to obtain streamlined fittings to withstand extremely severe service conditions. Stephen N. Buchanan, president of Buchanan Electrical Products Co., Inc., Elizabeth, N. J., was a pioneer in this work.

One of his contributions, of interest to fire alarm superintendents, traffic signal men, and city electricians, is a four-way-action crimping tool and a copper splice cap which Underwriters' have approved for use on either solid or stranded wires or both. Installation procedure is performed as follows: place splice cap in tool, insert twisted wires, close tool, and snap on insulator.

As the cap adds its copper to the twisted wires, the joint has less resistance than the wire itself. Other electrical advantages are that there are no burned insulation, no crystallized copper, and no sharp wire ends tending to puncture tape insulation. Inspection and testing are made easier, since a glance will show whether or not the wires have been properly inserted and secured. The one-size splice cap fits a range of wire combinations, thus adding to the simplicity of the method. In fact, an inexperienced electricians can do an excellent job.

FORGET IT !!

YES, we mean just that: Forget it! Forget the Rensselaer Gate Valve, or Hydrant, that you install today. Forget it for many years to come.

Isn't that what you want in a Valve or Hydrant: the assurance that it can be forgotten? When you buy Rensselaer, you buy more than just another valve; you also buy an assurance of long-term, trouble free service.

There are many worries you can't avoid; why not minimize the ones you can?

RENSSELAER VALVE CO.

TROY, N. Y.

WHEREVER YOU GO— YOU SEE BURROUGHS MACHINES

THE BUREAU OF WATER, Chicago, requires utmost speed and accuracy in preparing customers' bills . . . keeps on top of this important job with Burroughs Utility Billing Machines.

Back of the scenes, in most businesses, you will find Burroughs machines carrying out assignments vital to good management.

They lend speed and accuracy to the handling of payrolls, stock records, budgetary accounting, billing, purchase and payment records, accounts receivable—to mention a few. They provide management with up-to-the-minute information on which to base sound judgment. Efficient in themselves, they contribute to efficiency.

With this background of dependability to build on, Burroughs is at work on developments that will make Burroughs machines still finer in appearance and performance. Great things are going on at Burroughs for the business of tomorrow.

BURROUGHS ADDING MACHINE COMPANY • DETROIT 32, MICH.

FIGURING, ACCOUNTING, STATISTICAL AND CASH REGISTERING MACHINES • NATIONWIDE MAINTENANCE SERVICE • MACHINE SUPPLIES

Lister-Blackstone Changes Manufacturing Set-Up

Lister-Blackstone, Inc., Milwaukee 3, Wis., has announced a complete new set-up in the manufacture of its diesel engines. A new plant, equipped with up-to-date tools and machines, will house production facilities. F. Rankin Weisgerber, executive vice-president, stated that this is expected to result in greater production and even higher-quality engines.

F. Rankin Weisgerber

Almost complete concentration on the production of straight diesel engines will be a departure from the company's past policy. There will be some adaptions—such as power takeoff and irrigation pump outfits, and possibly marine propulsion units, but no diesel generator sets or combination auxiliaries will be produced. These will be built, in the general field, by electrical manufacturers who can more readily meet the exact requirements of customers; and, in the marine field, they will be handled by manufacturers along the coast-lines, who are in a better position for installation and service.

A new modern parts department, established at 1568 W. Pierce St., Milwaukee, Wis., will provide streamlined parts service, and all business will be transacted from a new downtown office at 740 N. Plankinton Ave., Milwaukee 3, Wis.

New President for Great American Industries

R. T. Dunlap, formerly executive vice-president of Colorado Fuel and Iron Corp., was elected president and a director of Great American Industries, Inc., 230 Park Ave., New York City, at a recent board meeting.

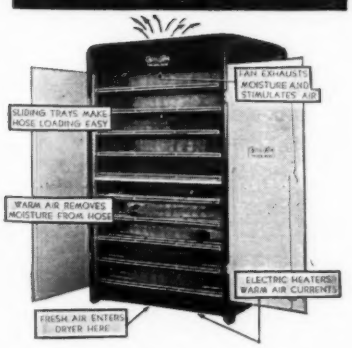
E. Ferry Holder, who is a director and member of the executive committees of Colorado Fuel and Iron and National Can Corp., was elected chairman of the board of Great American Industries. At that time Douglas C. Lynch, assistant general manager of Westinghouse Electric International Company was added to the board of directors.

Mr. Dunlap will have his headquarters at 230 Park Ave. He will take full charge of the operations of Ward LaFrance Truck Division, Elmira, N. Y.; Connecticut Telephone and Electric Division in Meriden, Conn., and Virginia Rubatex Division in Bedford, Va.

CIRCUL-AIR

FIRE HOSE DRYER

- Is easier to use
- Saves drying time
- Reduces hose stretch
- Prevents mildew and rot
- Improves building design
- Air-conditions as it dries


FAN EXHAUSTS MOISTURE AND STIMULATES AIR
SLIDING TRAYS MAKE HOSE LOADING EASY
WARM AIR REMOVES MOISTURE FROM HOSE
ELECTRIC HEATERS WARM AIR CURRENTS
FRESH AIR ENTERS DRYER HERE

The CIRCUL-AIR CORP.
575 E. Milwaukee Street
DETROIT 2 MICHIGAN

11 miles...

MIRAFLORES—Canal Zone

GAMBOA—Canal Zone

...at a STRETCH

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NATIONAL *Know How* PAYS

BEFORE

AFTER

Changes in pipe diameter, grades, bends and valves did not stop the National Water Main Cleaning Co. from cleaning eleven miles at a stretch in a line between Gamboa and Miraflores, Panama Canal Zone. The machine first traversed seventeen thousand feet of 30″ pipe; opened automatically to clean the next nineteen thousand feet of 36″ pipe, passing through 30″ gate valves enroute; and then, without slackening speed, passed into a 30″ line and cleaned another twenty-one thousand feet. Thus, the entire fifty-eight thousand feet were cleaned with but a single entry. The machine's operation was controlled by telephone and two-way radio. There was no interruption in service and the longest shut-off was eleven hours.

The technical skill and experience that enabled National to perform this feat will enable us to clean your mains more effectively, with fewer pipe openings, in less time.

THE NATIONAL WATER MAIN CLEANING CO.
50 CHURCH STREET, NEW YORK 7, N. Y.

ATLANTA 3
1221 Mortgage Guarantee Bldg.

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CHICAGO 6
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OMAHA 5
3812 Castellar St.

RICHMOND 19, VA.
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ST. LOUIS 17
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SAN FRANCISCO 5
501 Howard St.

WACO, TEXAS
The Rohan Co., Inc.
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WINNIPEG
576 Wall St.

MAYAQUEZ, P. R.
Americo Rodriquez, Inc.
P. O. Box 749

• Here's a machine that performs three jobs at once. And you can keep it moving steadily—all day long. In rapid succession, truckloads of asphalt mix are mechanically spread . . . "kneaded" and thoroughly *tamped* in place . . . and automatically leveled—all in one operation.

Moreover, the Barber-Greene Tamping-Leveling Finisher helps provide fast, cheap road construction by reducing the amount of rolling for adequate compaction . . . eliminating hand labor behind the machine . . . decreasing truck delay . . . cutting out the hazards encountered in other methods.

You'll find that a B-G Finisher saves days and dollars on every black top paving job. It handles mixes extremely difficult or impossible to lay by other means . . . maintains a mat of uniform thickness, ranging from ¼-inch to 6 inches . . . holds an accurate crown . . . and tightly seals joints with adjacent strips.

Before the call comes for the hurry-up resurfacing of worn-out highways, and the speedy construction of new roads and airports, plan to add a B-G *Tamping-Leveling* Finisher to your equipment. Write for literature outlining the functions and performance of this versatile machine. Barber-Greene Company, Aurora, Illinois.

Barber-Greene B G *Constant Flow Equipment*

45-8

Bulldozers and Grade Builders Developed for Allis-Chalmers HD-5

Illustrating the new bulldozers and grade builders developed by Baker for Allis-Chalmers diesel-powered HD-5.

Bulldozers and grade builders developed especially for the new Allis-Chalmers 2-cycle, diesel-powered HD-5 have been announced by the Baker Mfg. Co., Springfield, Ill.

Starting from tractor blueprints, Baker 'dozers were designed into the HD-5 to match tractor power, size, and speed; built to maintain tractor balance, stability, and traction, and mounted to save wear, tear, and maintenance costs.

The HD-5 is a small tractor newly engineered throughout, featuring a drawbar pull of 37.4 hp with five speeds from 1.46 to 5.47 mph, 1,000-hour roller and idler lubrication, full visibility for the operator, and simplified maintenance.

Baker adds to these tractor features with such built-in bulldozer advantages as direct down-pressure, low-pressure hydraulic system, less linkage, fast blade control, and rolling blade action.

Nordberg Makes Appointments

B. T. Eagerton has been appointed export manager by the Nordberg Mfg. Co., Milwaukee 7, Wis. Associated with exporting since 1928, Mr. Eagerton came to Nordberg from the Oliver Corporation, where he had served as assistant manager of the export division. Prior to that he was export manager for the Cleveland Tractor Company, which was later absorbed by the Oliver Corporation. During his many years in export work he traveled extensively and has a wide acquaintance in export markets. He will be located in the main office of the company in Milwaukee, Wisconsin.

B. T. Eagerton

It was also announced that Arthur G. Hall, formerly with the Koppers Company, has been appointed works manager of Nordberg. Following his graduation from the Massachusetts Institute of Technology in 1925, he joined the Bartlett Hayward Company at Fort Wayne. He later returned to the Bartlett Hayward Division of Koppers.

Southwest District Manager for Dresser

Elton E. Peavy has been appointed southwest district manager for Dresser Manufacturing Division, Dresser Industries, Inc., Bradford, Pa., according to a recent announcement by H. Z. Hight, sales manager. Mr. Peavy, who will cover the southwest territory, which includes Texas, Louisiana, Oklahoma, Arkansas, Mississippi, and New Mexico, will be responsible for the sale of all Dresser couplings, fittings, and repair products to the water industry in that area.

A graduate of Southern Methodist University, Mr. Peavy has been associated with the company for some months, both at the factory and in the field. He succeeds H. R. Shidel, who will direct the sale of Dresser welding fittings in this area and will supervise the Houston warehouse, which serves the southwest with a complete line of Dresser products.

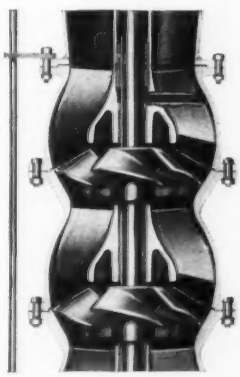
PEERLESS PUMPS

PEERLESS
Hydro-Foil PUMPS
Move huge volumes of water against low and medium heads

To rapidly move and remove maximum amounts of water
— PEERLESS MIXED-FLOW PUMPS

The most modern principles of aero and hydro-dynamic design are embodied in Peerless Mixed-Flow pump construction, attaining new high efficiencies in large volume water lift and lowering overall maintenance and pumping costs.

Numerous successful applications of Peerless Mixed-Flow Pumps include: drainage; sewer and flood control service; de-watering; irrigation water diversion; flooding of agricultural lands; industrial and process work including condensers, circulation of liquors, etc.



PEERLESS MIXED-FLOW PUMPS
CAPACITIES: UP TO 220,000 G.P.M.
Cutaway view of Mixed-Flow multi-stage pump impeller and bowl construction revealing high efficiency impellers used for more economical lift.

PROPELLER TYPE PUMPS
Peerless pumps, embodying the Hydro-Foil principle, are also available in the propeller type and are capable of handling identical capacities of the Peerless mixed-flow pump. Request Bulletin B-143 on design, construction and application data of these two outstanding types of Peerless Pumps, for large-volume pumping.

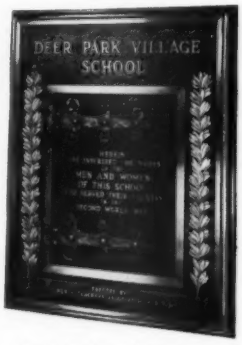
PEERLESS PUMPS
PEERLESS PUMP DIV. FOOD MACHINERY CORP.
Los Angeles 31, Calif.; Canton 6, Ohio; Quincy, Ill.
FACTORY BRANCHES: ARDMORE, PA.; DECATUR, ILL.; ATLANTA, GA.; DALLAS, TEXAS.
DISTRIBUTORS PRINCIPAL CITIES

NEW "OPENING DOOR" Roll of Honor

Bronze door partly open. Shows swinging sheets which form the pages of this permanent, all bronze book of remembrance.

New and distinctive—Cincinnati Metalcrafts' "Opening Door" Roll of Honor is the most practical and economical answer to the memorial problem. It is all bronze, therefore everlasting. Easily installed in inside or outside walls. Its swinging bronze sheets open like the leaves of a book and can accommodate up to 4400 names.

An important feature of the "Opening Door" Roll of Honor is that extra bronze sheets may be added after memorial is erected. This is an exclusive Cincinnati Metalcrafts' design.



With the heavy bronze door closed every detail is symbolic of the perfect tribute.

GOLD STAR MEMORIAL

In special tribute to those who sacrificed their lives, a Gold Star memorial makes available the rich dignity that only bronze can offer. It is personalized with the name and crest of your organization, as well as the names of those honored. It can include a bronze vase for flowers to be used on special anniversaries. Also offered in a special Church design using the cross of your faith. Another exclusive Cincinnati Metalcrafts' Memorial.

MEMORIALS FOR ALL PURPOSES

Please write, stating your organization, the number of names to be honored and the desired inscription. We will be glad to send you literature and our recommendation for the type of memorial best suited to your needs.

METAL CRAFTS

Every Cincinnati Metalcrafts' tablet, plaque and honor roll is guaranteed to be of highest quality materials and workmanship.

CINCINNATI METALCRAFTS, INC.

Dept. AC, 34th & Robertson Cincinnati 9, Ohio

Cast Iron Pipe

PLAIN CAST OR SPUN CENTRIFUGAL

Cast Iron Pipe and Special Castings, Bell and Spigot, Flange, Flexible Joint, Culvert, Milled and Plain End Tubes, Cylinders, Flanged and Bell and Spigot Fittings, High Pressure Fire Service Pipe, Warren Short Body Specials, Threaded End Pipe.

Size 2 to 84-inch

Pipe manufactured in accordance with standard specifications adopted and approved by water works associations and engineers.

Warren Foundry & Pipe Corp.
11 Broadway, New York City

Warren Pipe Co. of Massachusetts
75 Federal Street, Boston, Mass.

GUNITE

NEW CONSTRUCTION—REPAIRS

PRESTRESSED TANKS	STEEL ENCASEMENTS
RESERVOIR LINING	DAM REPAIRS
PEN STOCK LINING	TUNNEL LINING
SMOKE STACK LINING	SEWER REPAIRS

DISINTEGRATED CONCRETE ABUTMENTS RENEWED

REPAIRS TO ALL TYPES OF MASONRY

Write for our Bulletins

PRESSURE CONCRETE CO.

Engineers & Gunite Contractors

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PROPER HOUSE NUMBERING

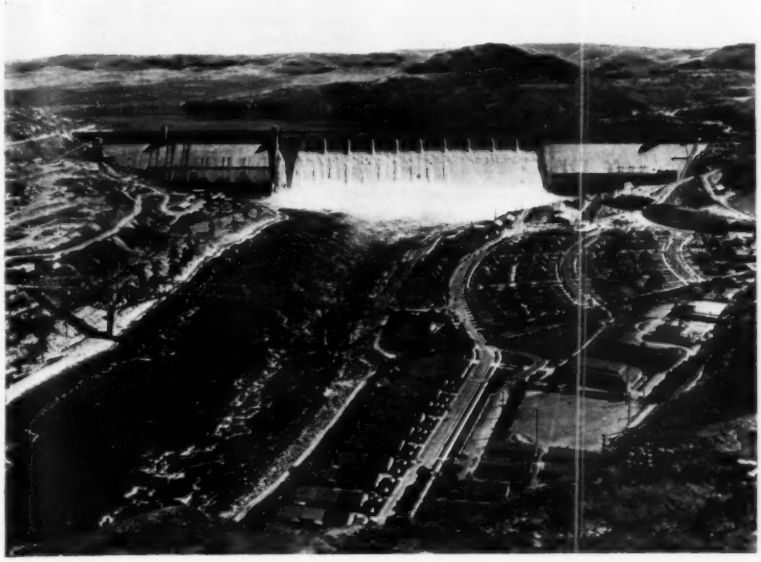
ADOPTED BY MUNICIPALITIES

Premax Stamped and Embossed Metal House Numbers have been generally approved because of their extreme legibility and permanence.

Premax Products

Diversey Chisholm-Ryder Co. Inc. 1855 Wrightwood Ave. Chicago 14, Ill.

Westinghouse Builds Giant Motors for Grand Coulee



Grand Coulee, which is being readied for the irrigation of more than a million acres of semi-arid land in south-central Washington. To help pump this water into the reservoir, Westinghouse will build four 65,000-hp motors 50% more powerful than the mightiest single alternating-current electric motor in existence.

Four 65,000-hp electric motors will be built by Westinghouse Electric Corp., Pittsburgh 30, Pa., for pumping the water from the Grand Coulee dam into the semi-arid regions of south-central Washington. Ordered by the U. S. Bureau of Reclamation, each will exceed by more than 50% the capacity of the most powerful single alternating-current motor now in existence, and with its giant pump could move enough water to supply the requirements of a city the size of New York.

The largest single alternating-current motor built to date is a 40,000-hp unit, weighing 125 tons, which Westinghouse constructed for use at Wright Field. This motor was used to drive air at 400 miles an hour through a wind tunnel at the field, where full-sized aircraft equipment was tested during the war. Each rotor of the motor will weigh 172 tons and the completed motor will tip the scales at 325 tons.

Factory Manager for Mack Truck Corp.

Helmer Peterson has been appointed factory manager at the Long Island City plant of Mack-International Motor Truck Corp., Empire State Bldg., New York City, according to a recent announcement by A. N. Morton, vice-president. In his new position, Mr. Peterson will supervise the manufacture of Mack fire apparatus and the fabrication of replacement parts for obsolete models of the entire Mack plant.

Mr. Peterson served his apprenticeship and received his certificate as master mechanic in Sweden before coming to this country. He has been employed by Mack since 1942 and was formerly located at the Plainfield, N. J., plant.

INSTALLATIONS WORLD WIDE

LARGEST CITY TO SMALLEST VILLAGE

VALVES COMPLETE EQUIPMENT FOR WATER WORKS FILTRATION AND SEWAGE DISPOSAL PLANTS

LATEST "COREY TYPE" HYDRANTS

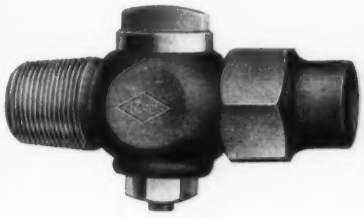
Write for Catalog and Information.

IOWA VALVE CO.

General Offices:
Hubbell Bldg., Des Moines, Iowa.

Plant:
Oskaloosa, Iowa.

QUALITY *that* COUNTS



...the "Diamond" Line

Yes, you'll always find that the high standards maintained here at McDonald's will give the type of service you can depend on—where it counts! For 91 years of craftsmanship and experience in the manufacture of quality waterworks goods backs every item in McDonald's Diamond Line. Illustrated is Plate 4701—McDonald Diamond Corporation Stop. Inlet is Mueller Thread. Outlet is Mueller Service Pipe Thread for copper tubing, same size as stop, except for ⅝ inch which is for ¾ inch copper tubing.

EST. 1856 McDonald

A. Y. McDONALD MFG. CO.
DUBUQUE, IOWA
BRASS GOODS • PUMPS • OIL EQUIPMENT

XUM

Speed Your Copying

The new Ozalid Streamliner for the reproduction of business forms and reports. The Streamliner makes prints that are positive copies of the original.

Here is a way to simplify general office procedure and to obtain reproductions of business forms, reports, etc., sixty-five times faster than is possible with conventional methods.

To do this, you need only do what every draftsman does in preparing his drawings—you simply type, write, or print on ordinary translucent paper or card stock . . . and that's your "Master," ready to turn out as many prints in the new Ozalid Streamliner as you would like to have.

Besides, each print will be a positive (not negative) copy of your original—easier to read and check. In addition to this efficiency, you have these other advantages at no extra cost:

Speed: Only 25 seconds are needed to reproduce standard-sized engineering drawings, accounting records, file cards, photographic film positives, and other translucent originals.

Economy: An 8½-by-11 inch reproduction costs only one cent; 11 by 17 inches, two cents; and so on. Your originals can be up to 42 inches wide, any length.

Versatility: The lines and images on your originals can be reproduced in black, blue, red, sepia, or yellow on paper, cloth, foil, film, or plastic. For example, Ozalid Black-line paper can be used to duplicate typewritten material, obtaining prints so good that they can be used as form letters with headings typed in on the prints with the same make of typewriter as was used to prepare the translucent "master."

It is also used for identifying colors to distinguish prints of different departments—Ozaplastic, for oilproof and waterproof prints for "extreme" shop or field use, and Ozachrome, to produce five-color transparent film overlays or amazing true-color copies of Ansco or Kodachrome transparencies.

Simplicity: The Streamliner makes printmaking an easy desk job, automatic in practically every detail. Anyone can feed originals and sensitized material into the Streamliner. Prints are delivered on top, staked in order, and within easy reach of the operator. The equipment can be installed anywhere in office or drafting room, since it requires only 11 square feet of floor space. Write Ozalid Division of General Aniline and Film Corp., Johnson City, N. Y., for more complete details on this machine.

New Vice-President for Line Material

C. W. Rubow has been made vice-president and general manager of the Line Material Co. of Pennsylvania at East Stroudsburg, according to a recent announcement.

C. W. Rubow

After attending the University of Wisconsin, Mr. Rubow became a tax expert with the American Appraisal Company and later became office manager of the Worthington Pump and Machinery Corporation. In 1926 he joined the Line Material Company at the main plant in South Milwaukee, Wis.; in 1928 he was transferred to East Stroudsburg as office manager and assistant secretary. Later he became purchasing agent, and in 1944 he was made assistant general manager and treasurer.

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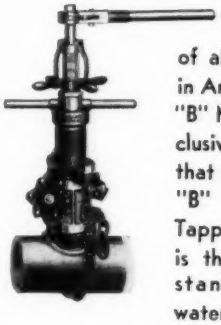

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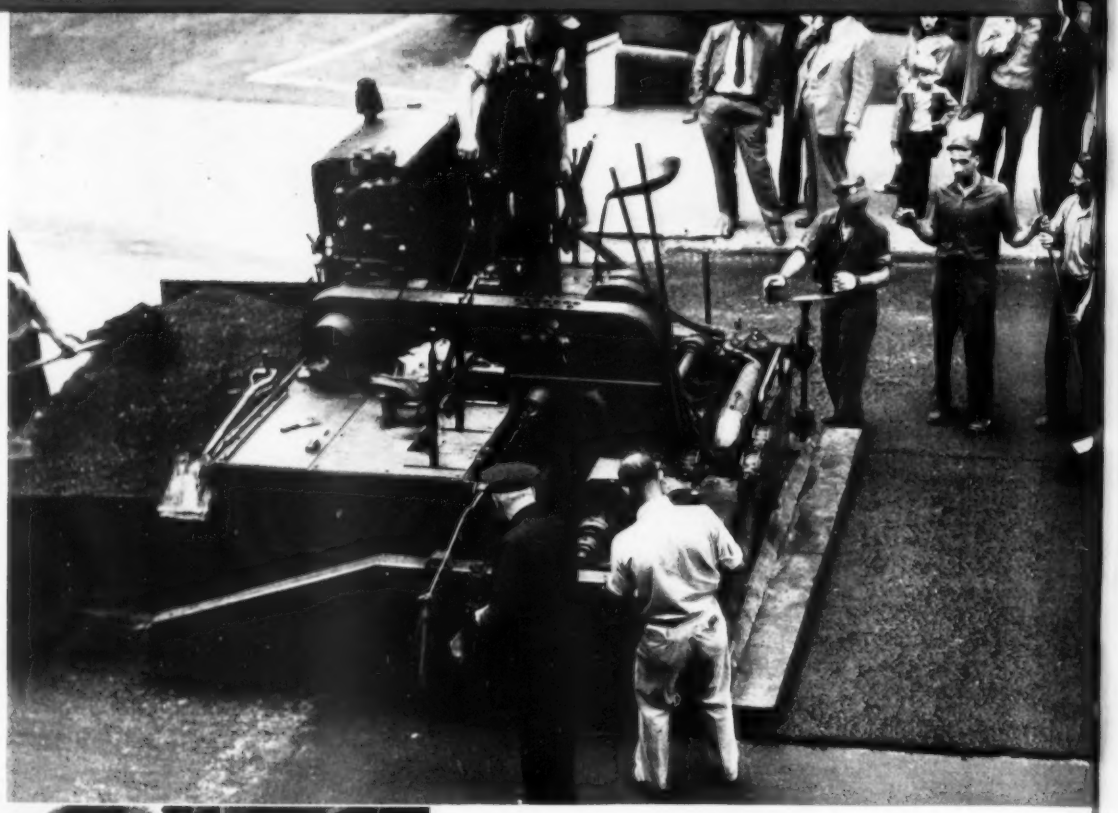
The American City

(Associated Press Photo)

The new president of the United States Conference of Mayors, George W. Welsh, of Grand Rapids, Mich. (center) and Mayor W. Cooper Green, of Birmingham, Ala., new vice-president (right) present to the executive director of the Conference, Paul V. Betters, of Washington, D. C., on January 22, a citation and award for distinguished services to the cities of the United States.

Transforming a rough cobblestone street into a smooth, easy-riding pavement



Laying a two-course Texaco Asphaltic Concrete pavement on a worn cobblestone street in Brattleboro, Vt.

Traffic on Main Street in Brattleboro now rolls along smoothly on its new Texaco Asphaltic Concrete pavement.

City officials of Brattleboro, Vt., decided something h be done about the old cobblestone pavement on Main S Not only was it rough and uncomfortable to drive on, b appearance did not reflect favorably on the community.

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Now, the heavy traffic of Main Street rolls along smoo Moreover, the attractive appearance of the smooth, resistant Texaco Asphalt surface is an excellent advertise for the city of Brattleboro.

For practical assistance with your street paving or maintenance problem, Texaco representatives, who are Asphalt specialists, are at your service. Write our nearest office.

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